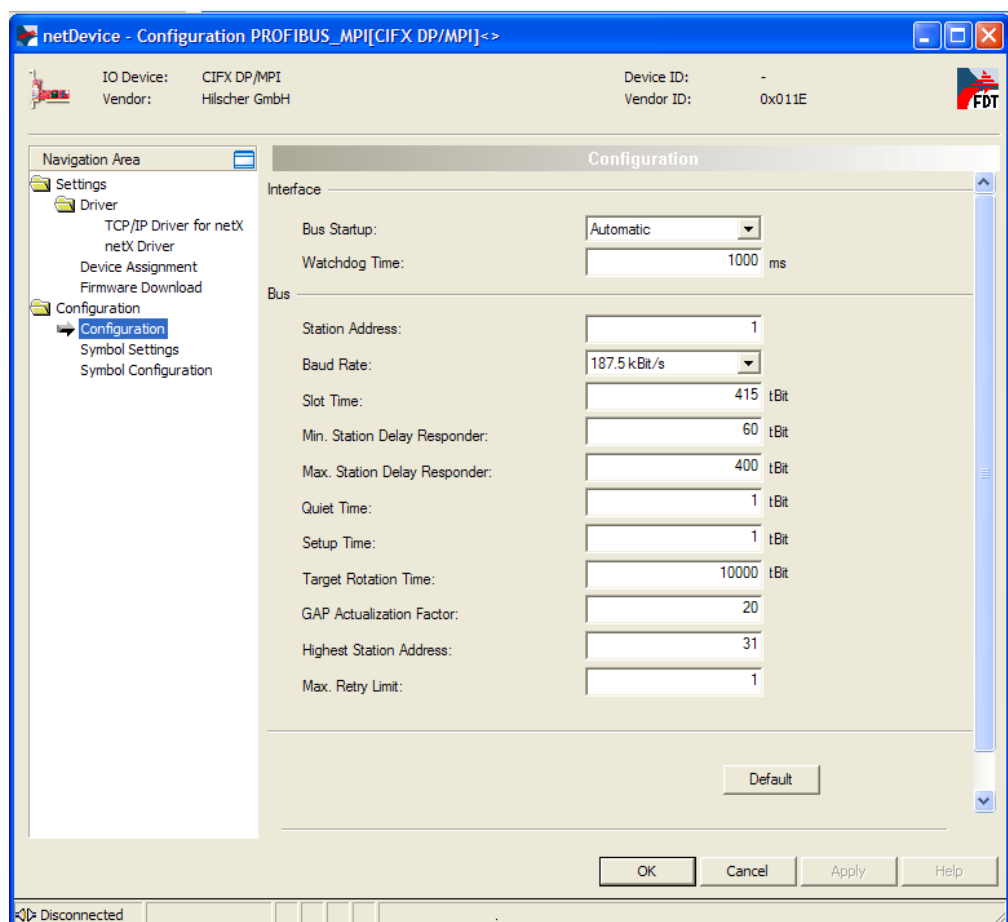


# Operating Instruction Manual

## DTM for Hilscher PROFIBUS MPI Devices

### Configuration of Hilscher MPI Devices



**Hilscher Gesellschaft für Systemautomation mbH**

**[www.hilscher.com](http://www.hilscher.com)**

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# 1 Introduction

## 1.1 About this Manual

This manual provides information on how you can configure the busparameters of a netX based PROFIBUS MPI device using the PROFIBUS MPI DTM and how you can download the new configuration to the device. Furthermore for projects with PLC-coupling you find in this manual how you can import and adjust a STEP7 signal configuration or how you can configure the signals without a STEP 7 project import, both by using the DTM. Also you can read here what information you can find on the diagnostic windows.

### **OPC Server and OPC Configuration Software**

About the OPC server this manual provides only information that is directly related to the operation of the PROFIBUS MPI DTM.



If the PROFIBUS MPI DTM works as part of an OPC server, you will find all information necessary for you to operate the OPC configuration software and the OPC server in a separate manual. See section *Documentations* on page 11.

## 1.1.1 Descriptions of the Dialog Panes

The table below gives an overview for the individual dialog panes descriptions:

| Section                   | Subsection                         | Page |
|---------------------------|------------------------------------|------|
| <i>Settings</i>           | <i>Overview Settings</i>           | 24   |
|                           | <i>Driver</i>                      | 27   |
|                           | <i>Device Assignment</i>           | 37   |
|                           | <i>Firmware Download</i>           | 43   |
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Table 1: Descriptions Dialog Panes

## 1.1.2 Online Help

The PROFIBUS MPI DTM contains an integrated online help facility.

- To open the online help, click on **Help** or press the **F1** key.

## 1.1.3 List of Revisions

| In-dex | Date     | Version                   | Component                                | Chapter                           | Revision                                                                                                                                                                                                                |
|--------|----------|---------------------------|------------------------------------------|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 2      | 13-08-07 | 1.0004.x.x,<br>1.0004.x.x | ProfibusMPIDTM.dll<br>ProfibusMPIDTM.ocx | All,<br>1.4.1,<br><br>3.5,<br>4.7 | Revised and updated.<br>Section <i>Requirements</i> updated.<br>Windows 8 added.<br>Section <i>Firmware Download</i> updated.<br>Section <i>Symbol Configuration</i> : Column<br>"Signal Type" was renamed to "Access". |

Table 2: List of Revisions

## 1.1.4 Note on Firmware Version

|              |         |
|--------------|---------|
| PROFIBUS MPI | 2.4.x.x |
|--------------|---------|

Table 3: Reference on Firmware Version

## 1.1.5 Conventions in this Manual

Notes, operation instructions and results of operation steps are marked as follows:

### Notes



**Important:** <important note>



**Note:** <note>



<note, where to find further information>

### Operation Instructions

1. <instruction>

2. <instruction>

or

➤ <instruction>

### Results

↪ <result>

### Positions in Figures

The *Positions* ①, ②, ③ ... or ①, ②, ③ ... or ①, ②, ③ ... refer to the figure used in that section. If the numbers reference to a section outside the current section then a cross reference to that section and figure is indicated.

### Langage Convention

Instead of „PROFIBUS<sup>®</sup> MPI<sup>®</sup>“ in this manual the notation „PROFIBUS MPI“ is used.

Instead of „STEP<sup>®</sup>7“ in this manual the notation „STEP7“ is used.

## 1.2 Legal Notes

### 1.2.1 Copyright

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- in systems in which failures in the software could lead to personal injury or injuries leading to death.

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## 1.2.5 Export Regulations

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STEP®7 is a registered trademark of Siemens AG, Berlin and Munich.

CODESYS® is a registered trademark of 3S-Smart Software Solutions GmbH, Deutschland.

All other mentioned trademarks are property of their respective legal owners.

## 1.3 Documentations

The following documentation overview gives information, for which items you can find further information in which manual.

| Manual                                                          | Contents                                                                                         | Dokument-ID      | File Name of the Document                         |
|-----------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------|---------------------------------------------------|
| Operating Instruction Manual SYCON.net                          | SYCON.net, Frame Application<br>( <i>Operating Instruction Manual of the Frame Application</i> ) | DOC040402OIXXDE  | SYCONnet netFrame OI XX EN.pdf                    |
|                                                                 | FDT, Container<br>( <i>Operating Instruction Manual of netDevice and netProject</i> )            | DOC040401OIXXDE  | SYCONnet netDevice OI XX EN.pdf                   |
|                                                                 | DTM for Hilscher PROFIBUS MPI Devices<br>( <i>this Operating Instruction Manual</i> )            | DOC110402OIXXDE  | PROFIBUS MPI DTM OI XX EN.pdf                     |
| Operating Instruction Manual netOPC Configurator and OPC Server | Installation of the netOPC and OPC Server Software and configuration of the OPC Server           | DOC100801OIXXDE  | netOPC - Konfigurator und OPC Server OI XX DE.pdf |
| PROFIBUS MPI Protocol API Manual                                | Description of PROFIBUS MPI device Protocol API                                                  | DOC071001APIXXEN | Profibus MPI Protocol API XX EN.pdf               |

Table 4: Documentations



All these documents are available in Adobe Acrobat® Reader format (PDF) on the DVD delivered with your device underneath the directory **Documentation** or on the website [www.hilscher.com](http://www.hilscher.com).

## 1.4 About PROFIBUS MPI DTM

You can use the PROFIBUS MPI DTM to configure the PROFIBUS MPI device within a FDT Framework.

Using the PROFIBUS MPI DTM you can configure the bus parameters of a PROFIBUS MPI device and download them to the device. In many cases the PROFIBUS MPI DTM is a part of the OPC server.

For projects with direct PLC-coupling via PROFIBUS MPI you can import a STEP7 signal configuration in the PROFIBUS MPI DTM and adapt the configuration in the process data-editor or you can configure the signals, without a STEP 7 project import. The signal configuration is structured by the modules and contains the symbolic names assigned to the modules and signals. The signals required for the additional processing must be set in the process data-editor. The symbol configuration of the selected signals then is stored in a process data XML file to which the OPC server accesses during the management of the signal lists.

## 1.4.1 Requirements

### System Requirements

- PC with 1 GHz processor or higher
- Windows® XP SP3, Windows® Vista (32 bit) SP2, Windows® 7 (32 bit) SP1, Windows® 7 (64 bit) SP1, Windows® 8 (32 bit) or Windows® 8 (64 bit)
- Administrator privilege required for installation
- Internet Explorer 5.5 or higher
- RAM: min. 512 MByte, recommended 1024 MByte
- Graphic resolution: min. 1024 x 768 pixel
- Keyboard and Mouse



**Note:** If the project file is saved and opened again or if it is used on another PC, the system requirements must match. Particularly the DTM must be installed on the used PC.

### **Restriction**

Touch screen is not supported.

### Requirements PROFIBUS MPI DTM

To configure the PROFIBUS MPI device with the PROFIBUS MPI DTM the following requirements have to be accomplished:

- Completed hardware installation of a netX based DTM-compatible PROFIBUS MPI device, inclusive loaded firmware and loaded configuration file
- Installed FDT/DTM V 1.2 compliant frame application
- Loaded DTM in the Device Catalog of the FTD Framework



**Note:** If the PROFIBUS MPI DTM and the PROFIBUS MPI device are installed on the same PC, the **cifX Device Driver** must be installed on that PC, as you can connect the DTM to the device.



For more information to the hardware installation, please refer to the corresponding **User Manual** of your device.

To get information on how to order and to download the license to the device, please refer to section *Licenses* on page 74.

## 1.5 Dialog Structure PROFIBUS MPI DTM

The graphical user interface of the DTM is composed of different areas and elements listed hereafter:

1. A header area containing the **General Device Information**,
2. The **Navigation Area** (area on the left side),
3. The **Dialog Pane** (main area on the right side),
4. **OK, Cancel, Apply, Help**,
5. The **Status Line** containing information e. g. the online-state of the DTM.

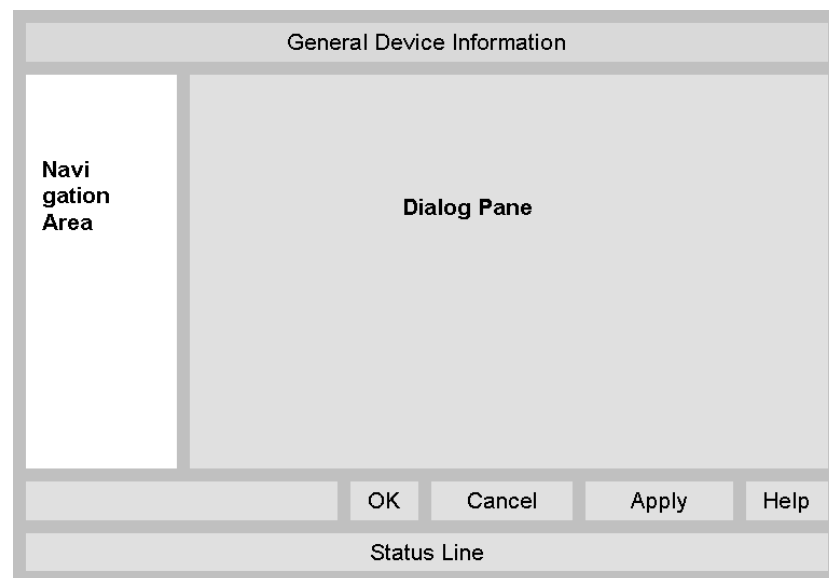


Figure 1: Dialog Structure of the PROFIBUS MPI DTM

## 1.5.1 General Device Information

| Parameter | Meaning                             |
|-----------|-------------------------------------|
| IO Device | Name of the device                  |
| Vendor    | Vendor name of the device           |
| Device ID | Identification number of the device |
| Vendor ID | Identification number of the vendor |

Table 5: General Device Information

## 1.5.2 Navigation Area

The **Navigation Area** contains folders and subfolders to open the dialog panes of the DTM.

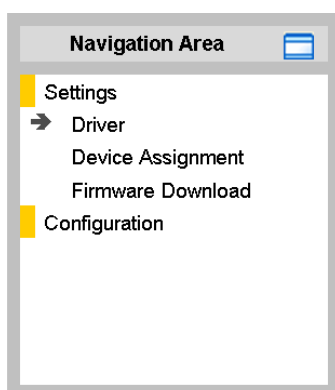


Figure 2: Navigation Area

- Select the required folder and subfolder.
- The corresponding Dialog pane is displayed.

### Hide / display Navigation

|                      |                                                |
|----------------------|------------------------------------------------|
|                      | Hiding the navigation area (above right side). |
| Show navigation area | Opening the navigation area (below left side). |

### 1.5.3 Dialog Panes

At the dialog pane the **Settings**, **Configuration**, **Diagnosis/Extended Diagnosis** or the **Tools** panes are opened via the corresponding folder in the navigation area.

| Settings                                   |                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Driver                                     | On the pane <b>Driver</b> you can select a driver from the driver list. For further information, refer to section <i>Driver</i> on page 27.                                                                                                                                                                                                                                       |
| Device Assignment                          | On the pane <b>Device Assignment</b> you select the device and assign the device to the driver. For further information, refer to section <i>Device Assignment</i> on page 37.                                                                                                                                                                                                    |
| Firmware Download                          | The dialog on the pane <b>Firmware Download</b> is used to load a new firmware into the device. A detailed description can be found in section <i>Firmware Download</i> on page 43.                                                                                                                                                                                               |
| Configuration                              |                                                                                                                                                                                                                                                                                                                                                                                   |
| Configuration                              | In the <b>Configuration</b> dialog you can configure the bus parameters of a PROFIBUS MPI device. For more information, see the section <i>Configuration</i> on page 51.                                                                                                                                                                                                          |
| Symbol Settings                            | In the <b>Symbol Settings</b> dialog for the signal configuration of projects with PLC-coupling you can select and import a STEP 7 project. For more information, see section <i>Symbol Settings</i> on page 57.                                                                                                                                                                  |
| Symbol Configuration (Process Data Editor) | As a process data-editor the <b>Symbol Configuration</b> dialog with the <b>PDI Editor Table</b> (PDI = Process Data Interface) is available. For projects with PLC-coupling you can customize here an imported STEP7 signal configuration or create the PLC signal configuration without prior import. For more information, see section <i>Symbol Configuration</i> on page 60. |
| Diagnosis                                  |                                                                                                                                                                                                                                                                                                                                                                                   |
| Diagnosis/<br>Extended Diagnosis           | At the <b>Diagnosis</b> panes diagnosis information can be read. For further information, refer to section <i>Overview Diagnosis</i> on page 88 or section <i>Overview Extended Diagnosis</i> on page 92.                                                                                                                                                                         |

Table 6: Overview Dialog Panes



**Note:** Accessing the **Diagnosis** panes of the PROFIBUS MPI DTM requires an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI DTM.



For further information, refer to section *Connecting/Disconnecting Device* on page 72.

## 1.5.4 OK, Cancel, Apply and Help

**OK, Cancel, Apply and Help** you can use as described hereafter.

|               | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|---------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OK</b>     | To confirm your latest settings, click <b>OK</b> . All changed values will be applied on the frame application database.<br><i>The dialog then closes.</i>                                                                                                                                                                                                                                                                                                                                                                                                |
| <b>Cancel</b> | To cancel your latest changes, click <b>Cancel</b> .<br>Answer to the safety query <b>Configuration data has been changed. Do you want to save the data?</b> by <b>Yes</b> , <b>No</b> or <b>Cancel</b> .<br><b>Yes:</b> The changes are saved or the changed values are applied on the frame application database.<br><i>The dialog then closes.</i><br><b>No:</b> The changes are <u>not</u> saved or the changed values are not applied on the frame application database.<br><i>The dialog then closes.</i><br><b>Cancel:</b> <i>Back to the DTM.</i> |
| <b>Apply</b>  | To confirm your latest settings, click <b>Apply</b> . All changed values will be applied on the frame application database.<br><i>The dialog remains opened.</i>                                                                                                                                                                                                                                                                                                                                                                                          |
| <b>Help</b>   | To open the DTM online help, click <b>Help</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |

Table 7: OK, Cancel, Apply and Help

## 1.5.5 Table Lines

In the DTM dialog pane table lines can be selected, inserted or deleted.

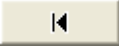
|                                                                                     | Meaning                                                               |
|-------------------------------------------------------------------------------------|-----------------------------------------------------------------------|
|  | To select the first line of a table use <b>First Line</b> .           |
|  | To select the previous line of a table use <b>Previous Line</b> .     |
|  | To select the next line of a table use <b>Next Line</b> .             |
|  | To select the last line of a table use <b>Last Line</b> .             |
|  | <b>Create a new Line</b> inserts new lines into the table.            |
|  | <b>Delete selected Line</b> deletes the selected line from the table. |

Table 8: Selecting, inserting, deleting Table Line

## 1.5.6 Status Bar

The **Status Bar** displays information about the current state of the DTM. The current activity, e.g. download, is signaled graphically via icons in the status bar.

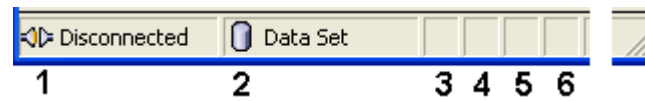
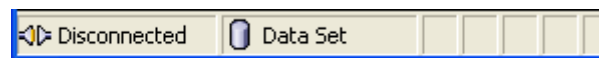


Figure 3: Status Bar – Status Fields 1 to 6

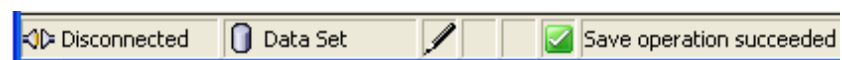
| Status Field | Icon / Meaning                             |                                                                                                                                                                                           |
|--------------|--------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1            | <b>DTM Connection States</b>               |                                                                                                                                                                                           |
|              |                                            | <b>Connected:</b> Icon closed = Device is online                                                                                                                                          |
|              |                                            | <b>Disconnected:</b> Icon opened = Device is offline                                                                                                                                      |
| 2            | <b>Data Source States</b>                  |                                                                                                                                                                                           |
|              |                                            | <b>Data set:</b> The displayed data are read out from the instance data set (database).                                                                                                   |
|              |                                            | <b>Device:</b> The displayed data are read out from the device.                                                                                                                           |
| 3            | <b>States of the instance Date Set</b>     |                                                                                                                                                                                           |
|              |                                            | <b>Valid Modified:</b> Parameter is changed (not equal to data source).                                                                                                                   |
| 4            | <b>Changes directly made on the Device</b> |                                                                                                                                                                                           |
|              |                                            | <b>Load/configure diagnosis parameters:</b> Diagnosis is activated.                                                                                                                       |
| 6            | <b>Device Diagnosis Status</b>             |                                                                                                                                                                                           |
|              |                                            | <b>Save operation succeeded:</b> The save operation has been successful.<br>Further messages due to successful handling of device data.                                                   |
|              |                                            | <b>Firmware Download:</b> Firmware Download is running                                                                                                                                    |
|              |                                            | <b>Save operation failed:</b> The save operation has failed.<br>Further fail operation messages due to incorrect communication due to malfunction in the field device or its peripherals. |

Table 9: Status Bar Icons [1]

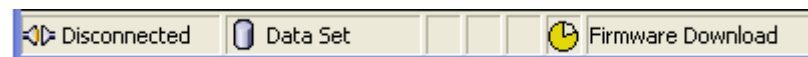
Offline State



Save operation succeeded



Firmware Download



Firmware Download successful



Online State and Diagnosis

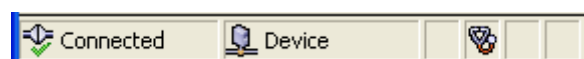


Figure 4: Status Bar Display Examples

## 2 Getting started

### 2.1 Configuration Steps

The following overview provides to you the step sequence on how to configure a netX based PROFIBUS MPI device with PROFIBUS MPI DTM as it is typical for many cases. Therefore you must configure the network and the PROFIBUS MPI bus parameters and for PLC-coupling via PROFIBUS MPI you must configure and select the signals. At this time it is presupposed that the hardware installation was done.

The overview lists all the steps in a compressed form. For detailed descriptions of each step refer to the sections noted in the column *For detailed information see section*.

| # | Step                                                   | Short Description                                                                                                                                                                                                                                 | For detailed information see section                                | Page |
|---|--------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------|------|
| 1 | Load device catalog                                    | Depending of the FDT Container:<br>For netDevice:<br>- select <b>Network &gt; Device Catalog</b> ,<br>- select <b>Reload Catalog</b> .                                                                                                            | (See Operating Instruction Manual netDevice and netProject)         | -    |
| 2 | Create new project / Open existing project             | Depending of the frame application.<br>For the configuration software:<br>- select <b>File &gt; New</b> or <b>File &gt; Open</b> .                                                                                                                | (See Operating Instruction Manual of the Frame Application)         | -    |
| 3 | Insert PROFIBUS MPI device into Network Configuration  | Depending of the FDT Container:<br>For netDevice:<br>- in the Device Catalog under <b>Gateway / Stand-Alone Slave</b> click to the PROFIBUS MPI device,<br>- and insert the device via drag and drop <b>to the root line</b> in the network view. | (See Operating Instruction Manual netDevice and netProject)         | -    |
| 4 | <i>Required for PLC-coupling:</i><br>Set Symbolic Name | In the FDT Container netDevice:<br>- Set symbolic name for the PROFIBUS MPI device.                                                                                                                                                               | <i>Set Symbolic Name for PROFIBUS MPI Device (for PLC-Coupling)</i> | 23   |
| 5 | Open the PROFIBUS MPI DTM configuration dialog         | Open the PROFIBUS MPI DTM configuration dialog.<br>- Double click to the device icon of the MPI device.<br>- The PROFIBUS MPI DTM configuration dialog is displayed.                                                                              | -                                                                   | -    |

| # | Step                                                  | Short Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | For detailed information see section                               | Page                |
|---|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|---------------------|
| 6 | Verify or adapt Driver Settings                       | <p>In the PROFIBUS MPI DTM configuration dialog:<br/>- select <b>Settings &gt; Driver</b>.</p>  <ul style="list-style-type: none"> <li>• <b>Note!</b> For PC cards cifX the <b>cifX Device Driver</b> is preset as a default driver. For all the other Hilscher devices the <b>netX Driver</b> is preset as a default driver. Use the <b>cifX Device Driver</b> if the PROFIBUS MPI DTM is installed on the same PC as the PROFIBUS MPI device.</li> <li>• Use the <b>netX Driver</b> to establish a USB, Serial (RS232) or TCP/IP connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device.</li> <li>• The <b>3SGateway Driver for netX (V3.x)</b> is used only in relationship with CODESYS.</li> </ul> <p>To search for devices you can check one or multiple drivers simultaneously.</p> <p>- Verify that the default driver is checked.<br/>- If necessary, check another driver or multiple drivers.</p> | <p><i>Settings for Driver and Device Assignment and Driver</i></p> | <p>25</p> <p>27</p> |
| 7 | Configure Driver                                      | <p>If you use the <b>netX Driver</b>, you respectively must configure it.</p> <p>For <b>netX Driver and communication via TCP/IP</b> set the IP address of the device:<br/>- Select <b>Settings &gt; Driver &gt; netX Driver &gt; TCP Connection</b>.<br/>- Via  add an IP range.<br/>- Under <b>IP Address</b> enter the IP Address of the device or an IP range.<br/>- Click <b>Save</b>.</p> <p>Adjust the driver parameters <b>netX Driver USB/RS232</b> only if they differ from the default settings.</p>  <p><b>Note!</b></p> <ul style="list-style-type: none"> <li>• The <b>cifX Device Driver</b> requires no configuration.</li> <li>• The configuration of the <b>3SGateway Driver for netX (V3.x)</b> is carried out via the CODESYS surface.</li> </ul>                                                            | <p><i>Configuring netX Driver</i></p>                              | <p>30</p>           |
| 8 | Assign PROFIBUS MPI device (with or without firmware) | <p>Assign PROFIBUS MPI the device to this driver.</p> <p>In the PROFIBUS MPI DTM configuration dialog:<br/>- select <b>Settings &gt; Device Assignment</b>,<br/>- select a PROFIBUS MPI device (with or without firmware),<br/>- therefore check the appropriate checkbox,<br/>- select <b>Apply</b>.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | <p><i>Selecting the Device (with or without firmware)</i></p>      | <p>40</p>           |

| #   | Step                                                                                                                              | Short Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | For detailed information see section                                                                               | Page          |
|-----|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------|---------------|
| 9   | Select and download firmware                                                                                                      | If not yet a firmware was loaded to the device.<br>In the PROFIBUS MPI DTM configuration dialog:<br>- select <b>Settings &gt; Firmware Download</b> ,<br>- select <b>Browse...</b> ,<br>- select a firmware file,<br>- select <b>Open</b> ,<br>- select <b>Download</b> and <b>Yes</b> .                                                                                                                                                                                                                                                                                                                                                                                                  | <i>Firmware Download</i>                                                                                           | 43            |
| 10  | Assign PROFIBUS MPI device once more (with firmware and system channel)<br><br><i>For repeated download this step is omitted.</i> | In the PROFIBUS MPI DTM configuration dialog:<br>- select <b>Settings &gt; Device Assignment</b> ,<br>- select <b>Scan</b> ,<br>- select the PROFIBUS MPI device (with loaded firmware),<br>- therefore check the appropriate checkbox,<br>- select <b>Apply</b> ,<br>- close the PROFIBUS MPI DTM configuration dialog via <b>OK</b> .                                                                                                                                                                                                                                                                                                                                                   | <i>Selecting the Device once more (with Firmware)</i>                                                              | 41            |
| 11  | Configure PROFIBUS MPI Bus Parameters                                                                                             | Configure the PROFIBUS MPI device.<br>- Double click to the PROFIBUS MPI device icon.<br>- The PROFIBUS MPI DTM configuration dialog is displayed.<br>In the PROFIBUS MPI DTM configuration dialog:<br>- select <b>Configuration &gt; Configuration</b> .<br>- set the PROFIBUS MPI bus parameters.                                                                                                                                                                                                                                                                                                                                                                                       | <i>Configuring PROFIBUS MPI Bus Parameters</i>                                                                     | 50            |
|     |                                                                                                                                   |  <b>Note</b><br>- Set the Station Address specifically for the PROFIBUS MPI device.<br>- The baud rate must be set necessarily.<br>- A change of bus parameters can cause communication failure.<br><br>- Save the bus parameters and close the PROFIBUS MPI DTM configuration dialog via <b>OK</b> .<br>OR for projects with PLC-coupling:<br>- Save the bus settings via <b>Apply</b> .                                                                                                                                                                                                              | <i>Configuration</i>                                                                                               | 51            |
| 12a | <i>For PLC-Coupling:</i><br><br><u>Either</u><br><i>Import and Customize the process data configuration</i>                       | Configure the signals for PROFIBUS MPI <u>with</u> the STEP7 project:<br>- Select <b>Configuration &gt; Symbol Settings</b> .<br>- Check <b>Use PLC Program</b> .<br><br> <b>Important!</b> All changes made in the <b>Symbol Configuration</b> dialog are lost when the STEP7 project is imported repeatedly (new-import) and the changes do not affect the function of the PLC in which the STEP7 program was loaded.<br><br>- Select a STEP7 project via <b>Browse...</b> .<br>- Import the project via <b>Open</b> .<br>- Save the project via <b>Apply</b> .<br><br><i>Further see next page.</i> | <i>Import and customize a STEP7 Process Data Configuration (Overview),</i><br><br><i>Import the STEP 7 Project</i> | 55,<br><br>57 |

| #   | Step                                                                                               | Short Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | For detailed information see section                                                                                                                                               | Page                          |
|-----|----------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------|
| 13a | <i>For PLC-Coupling:</i><br><i>Import and Customize the process data configuration (continued)</i> | <p><i>Continues from the page before.</i></p> <ul style="list-style-type: none"> <li>- Select <b>Configuration &gt; Symbol Configuration</b>.</li> </ul> <p> <b>Important!</b> Under <b>Station Address</b> enter the <u>PLC station address</u>. The station address of the STEP7 project may not be used here.</p> <ul style="list-style-type: none"> <li>- Respectively customize the signal configuration.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <i>Configure STEP7 Signals with the Process Data-Editor</i>                                                                                                                        | 60                            |
| 13b | <i>Or</i><br><i>Create the process data configuration manually</i>                                 | <p>Configure the signals for PROFIBUS MPI <u>without</u> STEP7 project:</p> <ul style="list-style-type: none"> <li>- Select <b>Configuration &gt; Symbol Settings.*</b></li> <li>- Remove the hook at <b>Use PLC Program.*</b></li> </ul> <p>*If an imported STEP7 project shall not be used.</p> <p> <b>Important!</b> If you remove the hook <b>Use PLC Program</b>, any settings on the signal configurations made in the <b>Symbol Configuration</b> dialog will be lost. Thereby also any signal configurations in the OPC server will be lost.</p> <ul style="list-style-type: none"> <li>- Select <b>Configuration &gt; Symbol Configuration</b>.</li> <li>- Create in the <b>Symbol Configuration</b> dialog the signal configuration for the PROFIBUS MPI device. E. i., configure the modules and signals.</li> </ul> <p> <b>Important!</b> Under <b>Station Address</b> enter the <u>PLC station address</u>. It is not allowed to use the station address of the STEP7 project here.</p> <ul style="list-style-type: none"> <li>- In the <u>first line</u> for <i>Device_1</i> enter the <b>Station Address</b>.</li> <li>- In the <u>second line</u> for <i>Module_1</i> select the <b>Module Type</b>.</li> <li>- In the <u>third line</u> for <i>Singal_1</i> configure <b>Access, Memory area, Data Type, Offset and Bit-Number</b>.</li> <li>- If necessary, add and configure additional modules and signals.</li> </ul> | <p><i>Creating a Process Data Configuration without STEP7 Project (Overview),</i></p> <p><i>Reset „Use PLC Program“</i></p> <p><i>Configure Signals without STEP 7 Project</i></p> | <p>56</p> <p>59</p> <p>69</p> |
| 14  | <i>For PLC-Coupling:</i><br>Select signals                                                         | - Under <b>SCADA</b> check all signals for the additional processing.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          | <i>(compare 13a or 13b)</i>                                                                                                                                                        |                               |
| 15  | Close PROFIBUS MPI DTM configuration dialog                                                        | - Close the PROFIBUS MPI DTM configuration dialog via <b>OK</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | -                                                                                                                                                                                  | -                             |
| 16  | Save project                                                                                       | Depending of the frame application.<br>For the configuration software:<br>- select <b>File &gt; Save</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | <i>(See Operating Instruction Manual of the Frame Application)</i>                                                                                                                 | -                             |
| 17  | <i>Only for project with PLC-Coupling:</i> Configure OPC Server                                    | This step must be performed elsewhere in the OPC configuration software.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | <i>(See Operating Instruction Manual netOPC Configurator and OPC Server)</i>                                                                                                       |                               |
| 18  | Connect PROFIBUS MPI device                                                                        | Depending of the FDT Container.<br>For netDevice:<br>- right click to the device icon of the PROFIBUS MPI device,<br>- select <b>Connect</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | <i>Connecting/Disconnecting Device</i>                                                                                                                                             | 72                            |

| #  | Step                   | Short Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | For detailed information see section   | Page |
|----|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------|
| 19 | Download Configuration | Depending of the FDT Container.<br>For netDevice:<br>- right click to the device icon of the PROFIBUS MPI,<br>- select <b>Download</b> .                                                                                                                                                                                                                                                                                                                                                                                    | <i>Download Configuration</i>          | 73   |
| 20 | Diagnosis              | Depending of the FDT Container.<br>For netDevice:<br>- right click to the device icon of the PROFIBUS MPI device,<br>- select <b>Diagnosis</b> .<br>- The PROFIBUS MPI DTM diagnosis dialog is displayed.<br>(1) Check whether the communication is OK:<br><b>Diagnosis &gt; General Diagnosis &gt; Device status "Communication"</b> must be green!<br>(2) <b>"Communication"</b> is not green: Use Diagnosis and Extended diagnosis for troubleshooting.<br>- close the PROFIBUS MPI DTM diagnosis dialog via <b>OK</b> . | <i>Overview Diagnosis</i>              | 88   |
| 21 | Disconnect             | Depending of the FDT Container.<br>For netDevice:<br>- right click to the device icon of the PROFIBUS MPI device,<br>- select <b>Disconnect</b> .                                                                                                                                                                                                                                                                                                                                                                           | <i>Connecting/Disconnecting Device</i> | 72   |

Table 10: Getting started - Configuration Steps

## 2.2 Set Symbolic Name for PROFIBUS MPI Device (for PLC-Coupling)

For projects with PLC coupling, you must make the identification of the OPC server configuration file. Therefore you must assign a symbolic name to the PROFIBUS MPI device, in the **netDevice** FDT container:

- Right click on the device icon and select in the context menu **Symbolic Name**.

➤ The **Change Symbolic Name** dialog is displayed.

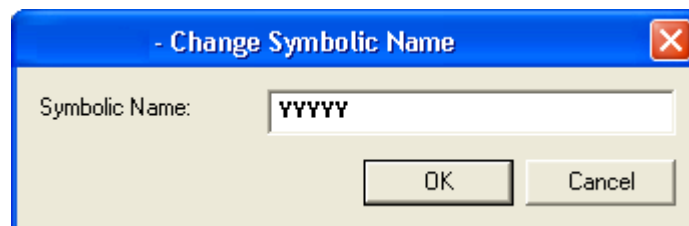


Figure 5: Change Symbolic Name

➤ Enter a symbolic name for the PROFIBUS MPI device.

➤ The symbolic name is displayed in the network configuration as an additional device name beneath the device description.

|                                  |                                                 |
|----------------------------------|-------------------------------------------------|
| YYYYY [XXXX] <1> (#1)            | ← Device name in the network configuration      |
| YYYYY <i>Symbolic Name</i>       | ← Additional name for the device                |
| [XXXX] <i>Device Description</i> | ← Name of the device (not editable)             |
| <1> <i>Station Address</i>       | ← PROFIBUS MPI address of the device on the bus |
| (#1) <i>Network ID</i>           | ← Network address of the PROFIBUS MPI device    |



Information on this issue, see the operating instruction manual **netDevice** and **netProject**, which is also accessible online.

## 3 Settings

### 3.1 Overview Settings

#### Settings Dialog Panes

The table below gives an overview for the individual **Settings** dialog panes descriptions:

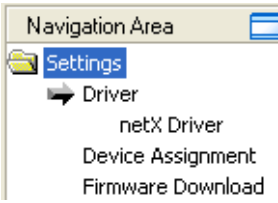
| PROFIBUS MPI DTM                                                                                                                                                               | Folder Name / Section | Subsection                                      | Manual Page |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-------------------------------------------------|-------------|
|  <p>Navigation Area –<br/>Settings (Example)<br/>Additional drivers can be<br/>displayed.</p> | Driver                |                                                 | 27          |
|                                                                                                                                                                                |                       | Verify or adapt Driver Settings                 | 27          |
|                                                                                                                                                                                |                       | cifX Device Driver                              | 29          |
|                                                                                                                                                                                |                       | netX Driver                                     | 29          |
|                                                                                                                                                                                |                       | Configuring netX Driver                         | 30          |
|                                                                                                                                                                                | Device Assignment     |                                                 | 37          |
|                                                                                                                                                                                |                       | Scanning for Devices                            | 37          |
|                                                                                                                                                                                |                       | Scanning for all Devices or for suitable only   | 39          |
|                                                                                                                                                                                |                       | Selecting the Device (with or without firmware) | 40          |
|                                                                                                                                                                                |                       | Selecting the Device once more (with Firmware)  | 41          |
|                                                                                                                                                                                | Firmware Download     |                                                 | 43          |

Table 11: Descriptions of the Dialog Panes Settings



**Note:** To edit the **Settings** dialog panes you need *User Rights* for “Maintenance”.



Notice the descriptions in the section *Settings for Driver and Device Assignment* on page 25.

To access to the online help with the descriptions of the drivers:

- Select **Settings > Driver > [Name of the assigned driver]**.
- Press the **F1** key.

## 3.2 Settings for Driver and Device Assignment

The following steps are needed to establish a connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device:

### Verify or adapt Driver Settings

Verify the Driver Settings and adapt them if necessary.

1. Open the DTM configuration dialog.
  - In the FDT container **netDevice** double click to the PROFIBUS MPI device icon.
2. Verify that the default driver is checked and respectively check another or multiple drivers.
  - Select **Settings > Driver**.



**Note!** For PC cards cifX the **cifX Device Driver** is preset as a default driver. For all the other Hilscher devices the **netX Driver** is preset as a default driver.

- Use the **cifX Device Driver** if the PROFIBUS MPI DTM is installed on the same PC as the PROFIBUS MPI device.
- Use the **netX Driver** to establish a USB, Serial (RS232) or TCP/IP connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device.
- The **3SGateway Driver for netX (V3.x)** is used only in relationship with CODESYS.

To search for devices on the network you can check one or multiple drivers simultaneously.

- Verify that the default driver for your device is checked.
- If necessary, check another driver or multiple drivers.

### Configure Driver



**Note!**

- The **cifX Device Driver** requires no configuration.
- The configuration of the **3SGateway Driver for netX (V3.x)** is carried out via the CODESYS surface.

If you use the **netX Driver**, you respectively must configure it.

3. Configure the **netX Driver** if necessary.

For the driver **netXDriver** an individual driver dialog window can be opened where you can configure the driver.

- Select **Settings > Driver > netX Driver**.
- For netX Driver and communication via TCP/IP set the IP address of the device.

Adjust the driver parameters **netX Driver USB/RS232** only if they differ from the default settings.

### **Assigning the PROFIBUS MPI Device to the DTM**

4. Scan for and select the devices (with or without firmware).
  - Select **Settings > Device Assignment**.
  - Under **Device selection** select *suitable only* or *all* and then **Scan**.
  - In the table check the required devices.
  - Select **Apply**.

### **Select and download the Firmware**

5. If not yet a firmware was loaded to the device, select and download the firmware.
  - Select **Settings > Firmware Download**.
  - Select and download the firmware via **Download**.
  - Select **Apply**.
6. Scan for and select the devices (with firmware and defined system channel) once more.

*For repeated download this step is omitted.*

  - Select **Settings > Device Assignment**.
  - Select **Scan**.
  - In the table check the required devices.
7. Close the DTM configuration dialog via **OK**.

### **Connecting the Device**

8. In **netDevice** put a right-click on the PROFIBUS MPI device icon.
9. Select the **Connect** command from the context menu.
  - 🔗 In the network view the device description at the device icon of the PROFIBUS MPI device is displayed with a green colored background. The PROFIBUS MPI device now is connected to the PROFIBUS MPI DTM via an online connection.

### **Further Information**



For descriptions about these steps refer to the sections following hereafter.

### 3.3 Driver

The **Driver** dialog pane displays the drivers to be used for a PROFIBUS MPI DTM to establish a device communication connection.



**Note!** A default driver is set in the configuration software.

| Driver                              |                                  |              |                                        |
|-------------------------------------|----------------------------------|--------------|----------------------------------------|
|                                     | Driver                           | Version      | ID                                     |
| <input checked="" type="checkbox"/> | CIFX Device Driver               | 1.101.1.9801 | {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA} |
| <input type="checkbox"/>            | 3SGateway Driver for netX (V3.x) | 0.9.1.2      | {787CD3A9-4CF6-4259-8E4D-109B6A6BEA91} |
| <input type="checkbox"/>            | netX Driver                      | 1.103.2.5183 | {B54C8CC7-F333-4135-8405-6E12FC88EE62} |

Figure 6: Default Driver 'CIFX Device Driver' for PC cards cifX

| Parameter | Meaning                                                          |
|-----------|------------------------------------------------------------------|
| Driver    | Name of the driver (for more details see descriptions hereafter) |
| Version   | ODMV3 Version of the respective driver                           |
| ID        | ID of the driver (driver identification)                         |

Table 12: Driver Selection List Parameters

To establish a connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device, verify if the default driver is checked and respectively check another driver or multiple drivers.

#### 3.3.1 Verify or adapt Driver Settings

Proceed as follows:

1. Select **Settings > Driver** in the navigation area.
- The **Driver** dialog pane is displayed with the available drivers and the setting for the default driver.

| Driver                              |                                  |              |                                        |
|-------------------------------------|----------------------------------|--------------|----------------------------------------|
|                                     | Driver                           | Version      | ID                                     |
| <input checked="" type="checkbox"/> | CIFX Device Driver               | 1.101.1.9801 | {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA} |
| <input type="checkbox"/>            | 3SGateway Driver for netX (V3.x) | 0.9.1.2      | {787CD3A9-4CF6-4259-8E4D-109B6A6BEA91} |
| <input type="checkbox"/>            | netX Driver                      | 1.103.2.5183 | {B54C8CC7-F333-4135-8405-6E12FC88EE62} |

Figure 7: Default Driver 'CIFX Device Driver' for PC cards cifX (example)

| Driver                              |                                  |              |                                        |
|-------------------------------------|----------------------------------|--------------|----------------------------------------|
|                                     | Driver                           | Version      | ID                                     |
| <input type="checkbox"/>            | CIFX Device Driver               | 1.101.1.9801 | {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA} |
| <input type="checkbox"/>            | 3SGateway Driver for netX (V3.x) | 0.9.1.2      | {787CD3A9-4CF6-4259-8E4D-109B6A6BEA91} |
| <input checked="" type="checkbox"/> | netX Driver                      | 1.103.2.5183 | {B54C8CC7-F333-4135-8405-6E12FC88EE62} |

Figure 8: Default Driver 'netX Driver' for Hilscher devices except for PC cards cifX (example)

2. Verify that the default driver is checked.
- Verify that the default driver for your device is checked.

**Default Driver** (Pre-settings in the Configuration Software): For PC cards cifX the **cifX Device Driver** is preset as a default driver. For all the other Hilscher devices the **netX Driver** is preset as a default driver.

3. Respectively check another driver.



**Note!** The driver used for the connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device must be supported by the device and must be available for the device.

- Use the **cifX Device Driver** if the PROFIBUS MPI DTM is installed on the same PC as the PROFIBUS MPI device.
- Use the **netX Driver** to establish a USB, Serial (RS232) or TCP/IP connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device.
- The **3SGateway Driver for netX (V3.x)** is used only in relationship with CODESYS. The version V3.x refers to the driver version defined by 3S-Smart Software Solutions GmbH.

➤ Check the checkbox for the driver in the selection list.

4. Respectively check multiple drivers.

To search for devices on the network you can check multiple drivers simultaneously.

| Driver                              |                                  |              |                                        |
|-------------------------------------|----------------------------------|--------------|----------------------------------------|
|                                     | Driver                           | Version      | ID                                     |
| <input checked="" type="checkbox"/> | CIFX Device Driver               | 1.101.1.9801 | {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA} |
| <input type="checkbox"/>            | 3SGateway Driver for netX (V3.x) | 0.9.1.2      | {787CD3A9-4CF6-4259-8E4D-109B6A6BEA91} |
| <input checked="" type="checkbox"/> | netX Driver                      | 1.103.2.5183 | {B54C8CC7-F333-4135-8405-6E12FC88EE62} |

Figure 9: Manual Selection of multiple drivers (Example)

### 3.3.2 cifX Device Driver

In the PROFIBUS MPI-DTM for the **cifX Device Driver** no driver dialog pane is available, since for the **cifX Device Driver** no driver settings are required.

The **cifX Device Driver** will be used if the PROFIBUS MPI DTM is installed in the same PC as the PROFIBUS MPI device.



**Note:** To establish a connection from a DTM to a PROFIBUS MPI device via the **cifX Device Driver**, the **cifX Device Driver** must be installed and the driver must have access to the PROFIBUS MPI device.

### 3.3.3 netX Driver

The **netX Driver** is used to connect the DTM to the device via different connection types. The DTM communicates with the device via an USB connection, a serial (RS232) connection or a TCP/IP connection. The **netX Driver** establishes

- via the USB interface of the device and the USB port of the PC an USB connection to the device,
- via the RS232 interface of the device and the COM port of the PC a serial connection (RS232) to the device
- and via Ethernet a TCP/IP connection to the device.

To connect the DTM to the physical layer of the device the **netX Driver** software works in combination with the software components:

- “USB/COM connector” for the USB connection and for the serial connection (RS232) and
- “TCP/IP connector” for the Ethernet connection.

### 3.3.4 Configuring netX Driver

The following steps are required to configure the netX Driver:

#### USB/RS232 Connection

To set the driver parameters for an USB/RS232 connection note:



**Note:** Adjust the driver parameters netX Driver USB/RS232 only if they differ from the default settings. After saving the changed driver parameters, these parameters are used for the device assignment when scanning devices.

For setting the driver parameters for an USB connection or a serial connection:

1. Select **Settings > Driver > netX Driver > USB/RS232 Connection**.
  - Set the driver netX Driver USB/RS232 parameters.

#### TCP/IP Connection

For setting the driver parameters for a TCP/IP connection:

1. Select **Settings > Driver > netX Driver > TCP Connection**.
  2. Set IP Address of the device:
    - Add an IP Range via **Select IP Range** .
  3. Under **IP Range Configuration > IP Address** enter the IP Address of the device (**Use IP Range** is unchecked).
- Or
4. Set IP Range:
    - Check **Use IP Range**.
    - Under **IP Range Configuration > IP Address** enter the start address (left side) and the ending address of the IP scanning range (right side).
  5. Click **Save**, to save the IP address or the IP range.
- After saving the changed driver parameters, these parameters are used for the device assignment when scanning devices.

### 3.3.5 netX Driver - USB/RS232 Connection

The communication from the DTM to the device via an **USB/RS232 Connection** is used when the DTM is installed on a PC and between the PC and the device

- an USB connection
- or a serial connection (RS232) exists.

The DTM accesses the device via the USB interface or via the RS232 interface. This requires either to connect an USB port of the PC to the USB interface of the device using an USB cable or to connect a physical COM port of the PC to the RS232 interface of the device via a serial cable.

The **netX Driver / USB/RS232 Connection** supports all physical and virtual COM ports available on the PC.

Via the RS232 interface or USB interface, the device is configured or diagnosis is performed.

### 3.3.5.1 Driver Parameters for netX Driver - USB/RS232 Connection

The settings of the driver parameters for the USB/RS232 connection are made via the **netX Driver / USB/RS232 Connection** configuration dialog.

- Open the **USB/RS232 Connection** dialog via navigation area **Settings > Driver > netX Driver**.

➤ The **USB/RS232 Connection** dialog is displayed:

Figure 10: netX Driver > USB/RS232 Connection

| Parameter                                                   | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | Range of Value / Default Value                                              |
|-------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| <b>Enable USB/RS232 Connector (Restart of ODM required)</b> | checked: The netX Driver can communicate via the USB/RS232 interface.<br>unchecked: The netX Driver can <u>not</u> communicate via the USB/RS232 interface.<br>If the check mark for <b>Enable USB/RS232 Connector</b> is set or removed, then the ODM server must be restarted <sup>1</sup> , to make the new setting valid.<br><br><sup>1</sup> Restart the ODM server via the <b>ODMV3 Tray Application</b> :<br>- In the foot line click on  using the right mouse key.<br>- In the context menu select <b>Service &gt; Start</b> . | checked,<br>unchecked;<br>Default:<br>unchecked                             |
| <b>Select Port</b>                                          | Depending on the COM ports (interfaces) available on the PC, they will be listed under <b>Select Port</b> .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | COM 1 to COM N                                                              |
| <b>Port Configuration</b>                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                                                                             |
| <b>Disable Port</b>                                         | checked: No connection.<br>unchecked: The netX Driver tries to establish a connection using the configured USB/RS232 interface.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | checked,<br>unchecked (Default)                                             |
| <b>Baud rate</b>                                            | Transfer rate: number of bits per second.<br>The device must support the baud rate.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 9.6, 19.2, 38.4, 57.6 or 115.2 [kBit/s];<br>Default (RS232): 115.2 [kBit/s] |

| Parameter                 | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Range of Value / Default Value                                                                              |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------|
| <b>Stop bits</b>          | Number of stop bits sent after the transfer of the send data for synchronization purposes to the receiver.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | Stop bit: 1, 1.5, 2;<br>Default (RS232): 1                                                                  |
| <b>Send Timeout</b>       | Maximum time before the transfer of the transmission data is canceled, when the send process fails, for example, because of the transfer buffer is full.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 100 ... 60.000 [ms];<br>Default (RS232 and USB): 1000 ms                                                    |
| <b>Reset Timeout</b>      | Maximum time for a device reset, including the re-initialization of the physical interface used for the communication.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 100 ... 60.000 [ms];<br>Default (RS232 and USB): 5000 ms                                                    |
| <b>Byte size</b>          | Number of bits per byte by byte specification                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 7 Bit, 8 Bit;<br>Default (RS232): 8 Bit                                                                     |
| <b>Parity</b>             | In the error detection in data transmission using parity bits, "parity" describes the number of bits occupied with 1 in the transmitted information word.<br>No Parity: no parity bit<br>Odd Parity: The parity is "odd" if the number of bits occupied with 1 in the transmitted information word will be odd.<br>Even parity: The parity is "even" if the number of bits occupied with 1 in the transmitted information word will be even.<br>Mark Parity: if the parity bit is always 1, this will be named mark-parity (the bit does not contain any information).<br>Space Parity: if the parity bit always 0, this will be named space-parity (the bit represents an empty space). | No Parity,<br>Odd Parity,<br>Even Parity,<br>Mark Parity,<br>Space Parity;<br>Default (RS232):<br>No Parity |
| <b>Keep Alive Timeout</b> | The "Keep Alive" mechanism is used to monitor whether the connection to the device is active. Connection errors are detected using a periodic heartbeat mechanism. The heartbeat mechanism will be initiated after the set time has elapsed if the communication has failed.                                                                                                                                                                                                                                                                                                                                                                                                             | 100 ... 60.000 [ms];<br>Default (RS232 and USB): 2000 ms                                                    |
| <b>Restore</b>            | Resets all settings in the configuration dialog to the default values.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |                                                                                                             |
| <b>Save</b>               | Saving all settings made in the configuration dialog <b>netX Driver &gt; Save USB/RS232 Connection</b> , i. e. only for the selected connection type.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                             |
| <b>Save All</b>           | Saving all settings made in the configuration dialog <b>netX Driver</b> , i. e. for all connection types.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                                                                                             |

Table 13: Parameters netX Driver &gt; USB/RS232 Connection

### 3.3.6 netX Driver - TCP/IP Connection

The communication from the DTM to the device via a **TCP/IP Connection** is used in the following two typical applications:

Application 1: The device has its own Ethernet interface. The DTM is installed on a PC and the TCP/IP connection is established from this PC to the stand-alone device. The IP address of the device is used.

Application 2: The device is installed in a remote PC. The DTM is installed on an additional PC and the TCP/IP connection is established from this PC to the remote PC. The IP address of the remote PC is used. For the TCP/IP connection is made, on the remote PC the cifX TCP/IP server must be started. The cifX TCP/IP server allows the remote access to the device via a TCP/IP connection.



---

**Note:** An exe file for the cifXTCP/IP server is provided on the product CD in the *Tools* directory.

---

Via the TCP/IP interface of the device or of the remote PC, the device is configured or diagnosis is performed.

### 3.3.6.1 Driver Parameters for netX Driver - TCP/IP Connection

The settings of the driver parameters for the TCP/IP connection are made via the **netX Driver / TCP Connection** configuration dialog.

- Open the **TCP Connection** dialog via navigation area **Settings > Driver > netX Driver**.
- The dialog **netX Driver** is displayed:
- Select **TCP Connection**.

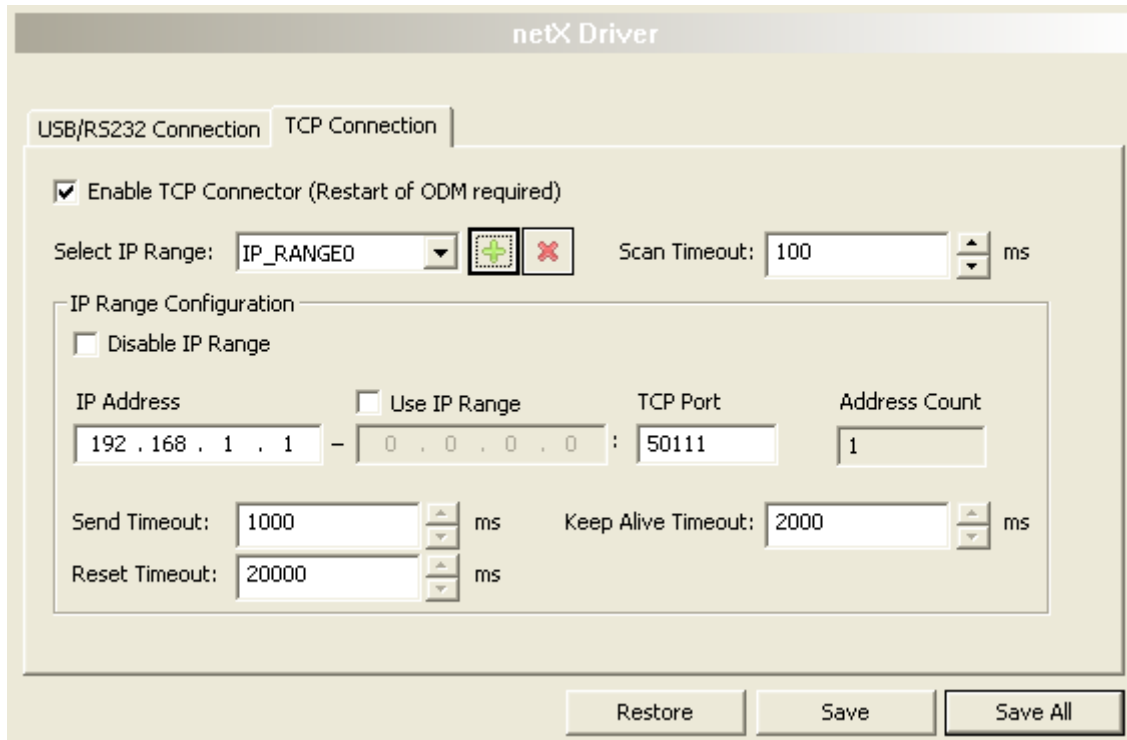


Figure 11: netX Driver > TCP Connection

| Parameter                                             | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | Range of Value / Default Value                  |
|-------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------|
| <b>Enable TCP Connector (Restart of ODM required)</b> | checked: The netX Driver can communicate via the TCP/IP interface.<br>unchecked: The netX Driver can <u>not</u> communicate via the TCP/IP interface.<br><br>If the check mark for <b>Enable TCP Connector</b> is set or removed, then the ODM server must be restarted <sup>1</sup> , to make the new setting valid.<br><br><sup>1</sup> Restart the ODM server via the <b>ODMV3 Tray Application</b> :<br>- In the foot line click on  using the right mouse key.<br>- In the context menu select <b>Service &gt; Start</b> . | checked,<br>unchecked;<br>Default:<br>unchecked |
| <b>Select IP Range</b>                                | Via <b>Select IP Range</b> already created IP ranges can be selected.<br><br>Via  an additional IP range can be added.<br><br>Via  an IP range can be deleted.                                                                                                                                                                                                                                                                               |                                                 |

| Parameter                      | Meaning                                                                                                                                                                                                                                                                      | Range of Value / Default Value                    |
|--------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------|
| <b>Scan Timeout [ms]</b>       | With <b>Scan Timeout</b> can be set, how long to wait for a response while a connection is established.                                                                                                                                                                      | 10 ... 10000 [ms];<br>Default: 100 ms             |
| <b>IP Range Configuration</b>  |                                                                                                                                                                                                                                                                              |                                                   |
| <b>Disable IP Range</b>        | checked: No connection.<br>unchecked: The netX Driver tries to establish a connection using the configured TCP/IP interface.                                                                                                                                                 | checked,<br>unchecked (Default)                   |
| <b>IP Address (left)</b>       | Enter the IP address of the device, (if <b>Use IP Range</b> is not checked).<br>Enter the start address of the IP scanning range, (if <b>Use IP Range</b> is checked).                                                                                                       | valid IP address;<br>Default: 192.168.1.1         |
| <b>Use IP Range</b>            | checked: An IP address range is used.<br>unchecked: Only one IP address is used.                                                                                                                                                                                             | checked,<br>unchecked;<br>Default:<br>unchecked   |
| <b>IP Address (right)</b>      | Enter the ending address of the IP scanning range, (only if <b>Use IP Range</b> is checked).                                                                                                                                                                                 | valid IP address;<br>Default: 0.0.0.0             |
| <b>Address Count</b>           | Displays the scanning range address count, depending on the selected IP-start or IP-end address. (For this read the note given below.)                                                                                                                                       | recommended: 10                                   |
| <b>TCP Port</b>                | Identifies the endpoint of a logical connection or addresses a specific endpoint on the device or PC.                                                                                                                                                                        | 0 - 65535;<br>Default Hilscher device:<br>50111   |
| <b>Send Timeout [ms]</b>       | Maximum time before the transfer of the transmission data is canceled, when the send process fails, for example, because of the transfer buffer is full.                                                                                                                     | 100 ... 60.000 [ms];<br>Default (TCP/IP): 1000 ms |
| <b>Reset Timeout [ms]</b>      | Maximum time for a device reset, including the re-initialization of the physical interface used for the communication.                                                                                                                                                       | 100 ... 60.000 [ms];<br>Default (TCP/IP): 2000 ms |
| <b>Keep Alive Timeout [ms]</b> | The "Keep Alive" mechanism is used to monitor whether the connection to the device is active. Connection errors are detected using a periodic heartbeat mechanism. The heartbeat mechanism will be initiated after the set time has elapsed if the communication has failed. | 100 ... 60.000 [ms];<br>Default (TCP/IP): 2000 ms |
| <b>Restore</b>                 | Resets all settings in the configuration dialog to the default values.                                                                                                                                                                                                       |                                                   |
| <b>Save</b>                    | Saving all settings made in the configuration dialog <b>netX Driver &gt; Save TCP/IP Connection</b> , i. e. only for the selected connection type.                                                                                                                           |                                                   |
| <b>Save All</b>                | Saving all settings made in the configuration dialog <b>netX Driver</b> , i. e. for all connection types.                                                                                                                                                                    |                                                   |

Table 14: Parameters netX Driver &gt; TCP Connection



**Note:** Do not use large IP ranges in combination with a low scan timeout. Microsoft introduced in Windows® XP SP2 a limit of concurrent half-open outbound TCP/IP connections (connection attempts) to slow the spread of virus and malware from system to system. This limit makes it impossible to have more than 10 concurrent half-open outbound connections. Every further connection attempt is put in a queue and forced to wait. Due to this limitation a large IP range used in combination with a low scan timeout could prevent the connection establishment to a device.

## 3.4 Device Assignment



**Note:** In the **Device Assignment** dialog pane you first must assign the PROFIBUS MPI device to the PROFIBUS MPI DTM by checking the check box. This is essential to establish an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device later, as described in section *Connecting/Disconnecting Device* on page 72.

Therefore in the **Device Assignment** dialog pane you scan for the PROFIBUS MPI device and select it.

If the device did not get a firmware or shall get a new firmware:

1. first you scan for the device (with or without firmware) and select the device,
2. then you download a firmware to the device and
3. subsequently you scan for the device (with firmware) once more and select the device again.

### 3.4.1 Scanning for Devices

1. Select **Settings > Device Assignment** in the navigation area.

➤ The dialog pane **Device Assignment** is displayed.

|                                     | Device     | Hardware Port 0/1/2/3 | Slot number | Serial number | Driver             | Channel Protocol    | Access path    |
|-------------------------------------|------------|-----------------------|-------------|---------------|--------------------|---------------------|----------------|
| <input checked="" type="checkbox"/> | Device Cl* | -/-/PROFIBUS/-        | 1           | 20148         | CIFX Device Driver | Undefined Undefined | ...\\cifX3_SYS |

Figure 12: Device Assignment - detected Devices (\* The name of the device class is displayed.) – Example for a device without firmware

2. Under **Device Selection** select *suitable only*.
3. Select **Scan**, to start the scanning process.

➤ In the table all devices are displayed, which can be connected to the PROFIBUS MPI DTM via the preselected driver.



**Note:** For devices, which have been found via the **cifX Device Driver** in the column **Access path** the indication **...\\cifX[0toN]\_SYS** is displayed. This is correct, as long as a device did not get a firmware. After the firmware download has been completed, in the column **Access path** the indication **...\\cifX[0toN]\_Ch[0to3]** is displayed.

| Parameter                                          | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | Range of Value / Default Value                                                                                                       |
|----------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------|
| Device selection                                   | Selecting <b>suitable only</b> or <b>all</b> devices.                                                                                                                                                                                                                                                                                                                                                                                                                                        | suitable only, all                                                                                                                   |
| Device                                             | Device class of the PROFIBUS MPI devices.                                                                                                                                                                                                                                                                                                                                                                                                                                                    |                                                                                                                                      |
| Hardware Port 0/1/2/3                              | Shows, which hardware is assigned to which communication interface.                                                                                                                                                                                                                                                                                                                                                                                                                          |                                                                                                                                      |
| Slot number                                        | Shows the <b>Slot Number (Card ID)</b> preset at the PC card cifX via the <b>Rotary Switch Slot Number (Card ID)</b> .<br><br>The indication <b>n/a</b> means that no <b>Slot-Nummer (Card ID)</b> exists. This will occur if the PC card cifX is not equipped with a <b>Rotary Switch Slot Number (Card ID)</b> or for PC cards cifX equipped with a <b>Rotary Switch Slot Number (Card ID)</b> if the rotary switch is set to the value 0 (zero).                                          | 1 to 9, n/a                                                                                                                          |
| Serial number                                      | Serial number of the device                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                                                                                                                                      |
| Driver                                             | Name of the driver                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                      |
| Channel Protocol                                   | Shows, which firmware is loaded to which device channel.<br><br>The data for the used channel consists of the protocol class and the communication class.<br><br>a.) For devices without firmware: Undefined Undefined,<br>b.) For devices with firmware: Protocol name corresponding to the used Firmware                                                                                                                                                                                   |                                                                                                                                      |
| Access path (last column on the right)             | Depending on the used driver in the column <b>Access path</b> different data to the device are displayed.<br><br>For the <b>cifX Device Driver</b> the following data are displayed:<br>a.) For devices without firmware: ...\\cifX[0toN]_SYS,<br>b.) For devices with firmware: ...\\cifX[0toN]_Ch[0to3].<br><br>cifX[0toN] = Board number 0 to N<br>Ch[0to3] = Channel number 0 to 3                                                                                                       | Depending on the device and on the driver:<br>board or channel number, IP address or COM interface                                   |
| Access path (at the lower side of the dialog pane) | If in the table a device is checked, under <b>Access path</b> (at the lower side of the dialog pane) the driver identification or depending on the used driver additional data to the device will be displayed.<br><br>For the <b>cifX Device Driver</b> the following data are displayed:<br>a.) For devices without firmware: ...\\cifX[0toN]_SYS,<br>b.) For devices with firmware: ...\\cifX[0toN]_Ch[0to3].<br><br>cifX[0toN] = Board number 0 to N<br>Ch[0to3] = Channel number 0 to 3 | driver identification (ID)<br><br>depending on the device and on the driver:<br>board or channel number, IP address or COM interface |

Table 15: Parameters of the Device Assignment

### 3.4.1.1 Scanning for all Devices or for suitable only

#### all

1. Under **Device Selection** select *all*.
2. Select **Scan**.

| Device Assignment                              |             |                       |             |               |                    |                     |                 |
|------------------------------------------------|-------------|-----------------------|-------------|---------------|--------------------|---------------------|-----------------|
| Scan progress: 5/5 Devices (Current device: -) |             |                       |             |               |                    |                     |                 |
| <div>Device selection: <span>all</span></div>  |             |                       |             |               |                    |                     | <div>Scan</div> |
|                                                | Device      | Hardware-Port 0/1/2/3 | Slot number | Serial number | Driver             | Channel Protocol    | Access path     |
| <input type="checkbox"/>                       | Device Cl.* | -/-/PROFIBUS/-        | 1           | 20148         | CIFX Device Driver | Undefined Undefined | ...\cifX3_SYS   |
| <input type="checkbox"/>                       | Device Cl.* | -/-/DeviceNet/-       | n/a         | 20027         | CIFX Device Driver | Undefined Undefined | ...\cifX1_SYS   |
| <input type="checkbox"/>                       | Device Cl.* | -/-/-/-               | n/a         | 20058         | netX Driver        | Undefined Undefined | ...\192.168.1.. |
| <input type="checkbox"/>                       | Device Cl.* | Ethernet/Ethernet/-/- | n/a         | 20288         | CIFX Device Driver | Undefined Undefined | ...\cifX2_SYS   |
| <input type="checkbox"/>                       | Device Cl.* | -/-/CANopen/-         | n/a         | 20022         | CIFX Device Driver | Undefined Undefined | ...\cifX0_SYS   |

Figure 13: Device Assignment - detected Devices (\* The name of the device class is displayed.) Example for Devices without Firmware

- In the table all devices are displayed, which are attainable in the network and which can be connected to a single DTM each via the preselected drivers.



**Note:** During a subsequent firmware download in the selection window **Select Firmware File** all files from the selected folder are displayed, under **Files of Type** „All Files (\*.\*)“ is displayed and the check box **Validate the selected firmware file.** is unchecked.

#### suitable only

1. Under **Device Selection** select *suitable only*.
2. Select **Scan**.

- In the table all devices are displayed, which can be connected to the PROFIBUS MPI DTM via the preselected drivers.



**Note:** During a subsequent firmware download in the selection window **Select Firmware File** only firmware files from the selected folder are displayed, under **Files of Type** „Firmware Files (\*.nxm)“ or „Firmware Files (\*.nxf)“ is displayed and the check box **Validate the selected firmware file.** is checked.

### 3.4.2 Selecting the Device (with or without firmware)



**Note:** A connection with the PROFIBUS MPI DTM can only be established with one PROFIBUS MPI device.

To select the physical PROFIBUS MPI device (with or without firmware):

1. Check the appropriate device.

Device Assignment

Scan progress: 5/5 Devices (Current device: -)

Device selection: suitable only Scan

|                                     | Device     | Hardware Port 0/1/2/3 | Slot number | Serial number | Driver             | Channel Protocol | Access path   |
|-------------------------------------|------------|-----------------------|-------------|---------------|--------------------|------------------|---------------|
| <input checked="" type="checkbox"/> | Device Cl* | -/-/PROFIBUS/-        | 1           | 20148         | CIFX Device Driver | PROFIBUS Master  | ...\cifx3_SYS |

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifx3\_SYS

Figure 14: Device Assignment - Selecting the Device (\* The name of the device class is displayed.) – Example for a device without firmware / one Device is selected

- Under **Access path** (below in the dialog pane) the access path to the device, e. g. the driver identification, or depending on the used driver additional access data of the device are displayed.

2. Select **Apply**, to apply the selection.



**Note:** Before an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device can be established, a firmware must be loaded to the device and the device must be selected once more.



For further information refer to section to section *Firmware Download* on page 43 or to section *Selecting the Device once more (with Firmware)* on page 41.

### 3.4.3 Selecting the Device once more (with Firmware)



**Note:** For repeated download this step is omitted.

To select the PROFIBUS MPI device (with firmware and defined system channel) once more, proceed as described hereafter:

#### all

1. Under **Device Selection** select *all*.
2. Select **Scan**.
  - In the table all devices are displayed, which are attainable in the network and which can be connected to a DTM via the preselected drivers.
3. Check the appropriate device.

**Device Assignment**

Scan progress: 5/5 Devices (Current device: -)

Device selection: all Scan

|                                     | Device     | Hardware-Port 0/1/2/3 | Slot number | Serial number | Driver             | Channel Protocol    | Access path     |
|-------------------------------------|------------|-----------------------|-------------|---------------|--------------------|---------------------|-----------------|
| <input checked="" type="checkbox"/> | Device Ci* | -/-/PROFIBUS/-        | 1           | 20148         | CIFX Device Driver | PROFIBUS-DP Master  | ...\cifX3_Ch0   |
| <input type="checkbox"/>            | Device Ci* | -/-/DeviceNet/-       | n/a         | 20027         | CIFX Device Driver | DeviceNet Master    | ...\cifX1_Ch0   |
| <input type="checkbox"/>            | Device Ci* | -/-/-/-               | n/a         | 20058         | netX Driver        | Undefined Undefined | ...\192.168.... |
| <input type="checkbox"/>            | Device Ci* | Ethernet/Ethernet/-/- | n/a         | 20288         | CIFX Device Driver | PROFINET IO Device  | ...\cifX2_Ch0   |
| <input type="checkbox"/>            | Device Ci* | -/-/CANopen/-         | n/a         | 20022         | CIFX Device Driver | Undefined Undefined | ...\cifX0_SYS   |

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifX3\_Ch0

Figure 15: Device Assignment - Selecting the Device (\* The name of the device class is displayed.) – Example for Devices with and without Firmware / one Device is selected



**Note:** After the firmware download has been completed, for the devices which have been detected via the **cifX Device Driver** the following data are displayed:

- In the column **Channel Protocol**: the data for the firmware for the used channel
- In the column **Access path** or under **Access path** (below in the dialog pane): the data: ...\\cifX[0toN]\_Ch[0to3].  
 cifX[0toN] = board number 0 to N  
 Ch[0to3] = channel number 0 to 3

4. Select **Apply**, to apply the selection.
5. Or select **OK**, to apply the selection and to close the DTM interface dialog.
6. Connect the DTM to the device using the context menu (right mouse click).

Or:

### **suitable only**

1. Under **Device Selection** select *suitable only*.
2. Select **Scan**.
- In the table all devices are displayed, which can be connected to the PROFIBUS MPI DTM via the preselected drivers.
3. Check the appropriate device.

Device Assignment

Scan progress: 5/5 Devices (Current device: -)

Device selection: suitable only Scan

|                                     | Device     | Hardware Port 0/1/2/3 | Slot number | Serial number | Driver             | Channel Protocol   | Access path   |
|-------------------------------------|------------|-----------------------|-------------|---------------|--------------------|--------------------|---------------|
| <input checked="" type="checkbox"/> | Device Cl* | -/-/PROFIBUS/-        | 1           | 20148         | CIFX Device Driver | PROFIBUS-DP Master | ...\cifX3_Ch0 |

Access path: {368BEC5B-0E92-4C0E-B4A9-64F62AE7AAFA}\cifX3\_Ch0

Figure 16: Device Assignment - Selecting the Device (\* The name of the device class is displayed.) – Example for a device with firmware / one Device is selected



**Note:** After the firmware download has been completed, for the devices which have been detected via the **cifX Device Driver** the following data are displayed:

- In the column **Channel Protocol**: the data for the firmware for the used channel
- In the column **Access path** or under **Access path** (below in the dialog pane): the data: ...\\cifX[0toN]\_Ch[0to3].  
cifX[0toN] = board number 0 to N  
Ch[0to3] = channel number 0 to 3

4. Select **Apply**, to apply the selection.
5. Or select **OK**, to apply the selection and to close the DTM interface dialog.
6. Connect the DTM to the device using the context menu (right mouse click).



For further information how to establish an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device, refer to section *Connecting/Disconnecting Device* on page 72.

## 3.5 Firmware Download

Using the **Firmware Download** dialog a firmware can be transferred to the device.



**CAUTION!** The firmware download

- Stops the bus communication,
- erases the configuration data base and
- overwrites the existing firmware in the device.

To complete the update and to make the device operable again, please re-download the configuration when this operation has finished.



**Note:** Prior to the firmware download, you must select the driver and the PROFIBUS MPI device (with or without firmware).



For further information refer to section *Overview Settings* on page 24.

To load the firmware to the device:

1. In the navigation area select **Settings > Firmware Download**.

➤ The dialog **Firmware-Download** pane is displayed.

Figure 17: Firmware Download

| Parameter | Meaning                                   |
|-----------|-------------------------------------------|
| Name      | Name of the Firmware                      |
| Version   | Version and Build Version of the Firmware |
| Browse... | Button to select the firmware file.       |
| Download  | Button to download the firmware.          |

Table 16: Parameter Firmware Download

2. Select **Browse**.

➤ The selection window **Select Firmware File** is displayed.

➤ Enlarge the selection window to view the columns **Hardware** and **Version**.

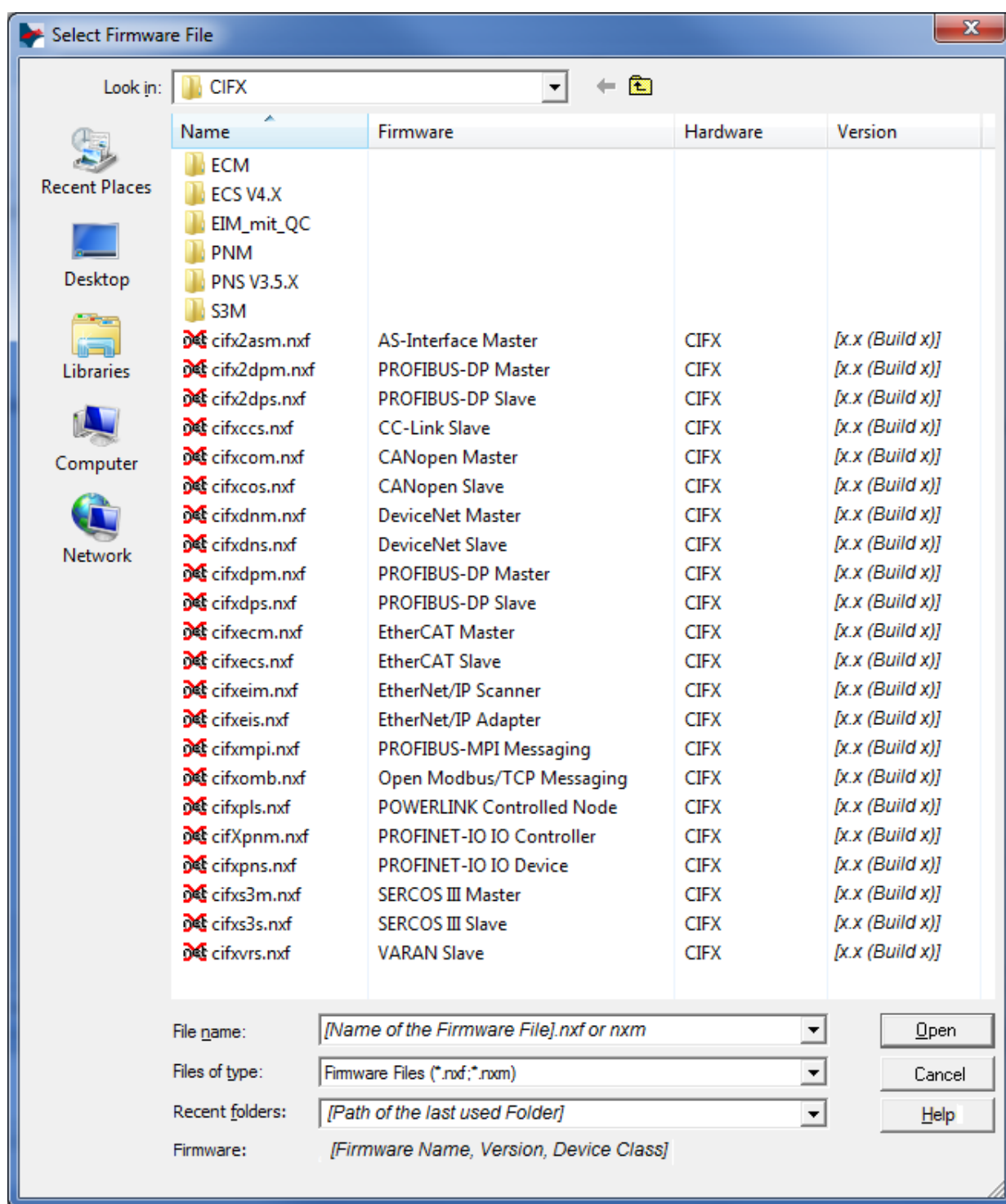


Figure 18: Window 'Select Firmware File' (Example CIFX)

| Parameter              | Meaning                                                                                                                                        | Range of Value / Default Value                              |
|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------|
| Column <b>Name</b>     | File name of the firmware file<br>To sort the entries of the window <b>Select Firmware File</b> by name click to the column head <b>Name</b> . | nxf, nxm                                                    |
| Column <b>Firmware</b> | Name of the firmware (consisting of the protocol name and protocol class)                                                                      |                                                             |
| Column <b>Hardware</b> | Device class of the associated hardware                                                                                                        | e. g. CIFX,<br>COMX, COMX 51,<br>NETJACK 10,<br>NETJACK 50, |

|                          |                                                                                                                                                                                                                                                                                                      |                                                                                                        |
|--------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|
|                          |                                                                                                                                                                                                                                                                                                      | NETJACK 51,<br>NETJACK 100,<br>NETTAP 50 (Gateway),<br>NETTAP 100 (Gateway),<br>NETBRICK 100 (Gateway) |
| Column<br><b>Version</b> | Firmware version                                                                                                                                                                                                                                                                                     | x.x (build x)                                                                                          |
| <b>Tooltip</b>           | To view the tooltip information move with the mouse pointer over the selected firmware line.<br><br><div> Type: Hilscher firmware file for netX-based targets (NXF)<br/> Size: 563 KB<br/> Date of change: 2013/03/26 11:10 </div>                                                                   |                                                                                                        |
| <b>Files of Type</b>     | „All Files (*.*)“ if before in the <b>Device Assignment</b> pane under <b>Device selection</b> <i>all</i> was selected.<br>„Firmware Files (*.nxm)“ or <i>Firmware Files (*.nxf)</i> if before in the <b>Device Assignment</b> pane under <b>Device selection</b> <i>suitable only</i> was selected. | All Files (*.*),<br>Firmware Files (*.nxm),<br>Firmware Files (*.nxf)                                  |
| <b>Recent folders</b>    | Path of the recently opened folder                                                                                                                                                                                                                                                                   |                                                                                                        |
| <b>Firmware</b>          | As soon as the firmware file has been selected, under <b>Firmware</b> the name, the version and the build version as well as the device class for the selected firmware is displayed.                                                                                                                | Name, Version, Build<br>Version, Device Class<br>for the selected firmware                             |
| <b>Help</b>              | Button, to open the online help of the DTM.                                                                                                                                                                                                                                                          |                                                                                                        |

Table 17: Parameters Select Firmware File



Further descriptions to the selection window **Select Firmware File** are included in the context sensitive help (F1 key) of the Microsoft Corporation.



**Note:** After in the **Device Assignment** pane under **Device selection** *all* or *suitable only* has been set, during a subsequent firmware download in the selection window **Select Firmware File** the following data are displayed or set:

| (for list box entry →)                                | all                                                                                             | suitable only                                                                        |
|-------------------------------------------------------|-------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| In the selection window <b>Select Firmware File</b> : | all files from the selected folder                                                              | only firmware files from the selected folder                                         |
| Under <b>Files of Type</b> *:                         | „All Files (*.*)“                                                                               | „Firmware Files (*.nxm)“,<br>„Firmware Files (*.nxf)“                                |
| Validation:                                           | A restricted validation will be performed if the selected firmware is applied for the download. | A validation is made whether the firmware file is suitable for the PROFIBUS MPI DTM. |

\*These settings in the selection window **Select Firmware File** can also be changed manually.

- In the selection window mark the firmware file to be loaded using the mouse.
-  In the selection window under **Firmware** the name and the version of the firmware are displayed.
- In the selection window select the **Open** button.
-  A validation is made, whether the selected firmware file is suitable for the PROFIBUS MPI DTM.
-  In the dialog pane **Firmware Download** during the validation **Download** is grayed out.
-  The selection window is closed.
- In the dialog pane **Firmware Download** click to the **Download** button,

to download the firmware.

Firmware is not valid for the selected device

- If a firmware file is selected, which is not valid for the assigned device, the request **Select Firmware File** will be displayed.



Figure 19: Request Select Firmware File - Example

- Answer to the request with **No**.

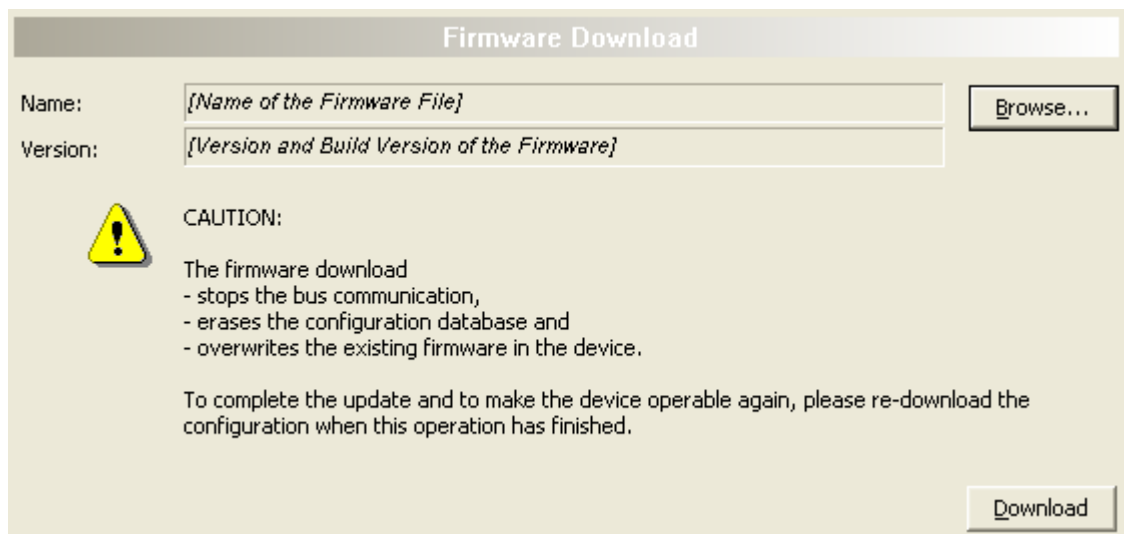


Figure 20: Firmware Download – Download

- The request **Do you really want to download the firmware?** is displayed.

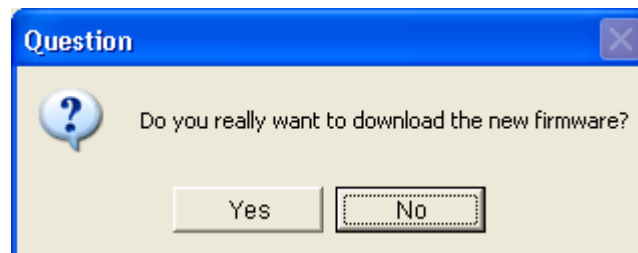


Figure 21: Firmware-Download –Question

- During the download a progress bar is displayed, in the status line a clock / green hook symbol is displayed and Download is grayed out.

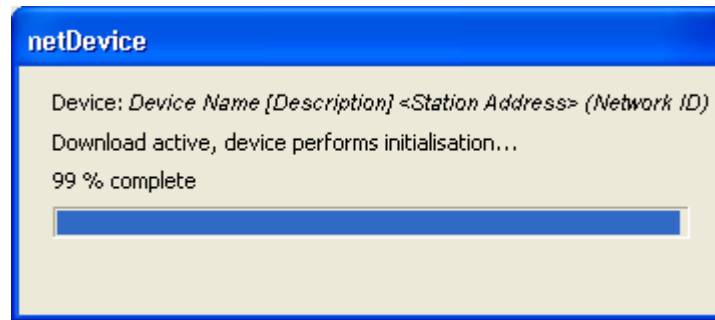


Figure 22: Clock Symbol and Hook Symbol green

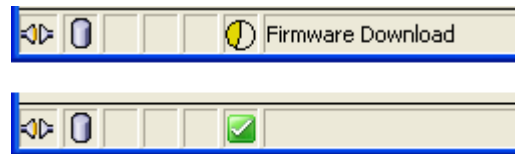


Figure 23: Firmware Download - Progress Bar

## 4 Configuration

### 4.1 Overview Configuration

#### Configuration Dialog Panes

The table below gives an overview for the **Configuration** dialog panes descriptions:

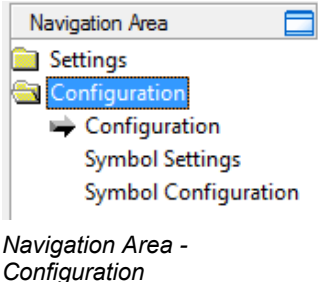
| PROFIBUS MPI DTM                                                                  | Descriptions of Steps                                                                                                  | Folder Name / Section       | Page |
|-----------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|-----------------------------|------|
|  | <b>Steps for 'Configuration'</b>                                                                                       |                             | 49   |
|                                                                                   | <b>Configuring PROFIBUS MPI Bus Parameters</b>                                                                         |                             | 50   |
|                                                                                   |                                                                                                                        | <i>Configuration</i>        | 51   |
|                                                                                   | <b>Process Data Configuration (for PLC-Coupling)</b>                                                                   |                             | 55   |
|                                                                                   | <ul style="list-style-type: none"> <li>• <i>Import and customize a STEP7 Process Data Configuration</i></li> </ul>     |                             | 55   |
|                                                                                   | <ul style="list-style-type: none"> <li>• <i>Creating a Process Data Configuration without STEP7 Project</i></li> </ul> |                             | 56   |
|                                                                                   |                                                                                                                        | <i>Symbol Settings</i>      | 57   |
|                                                                                   |                                                                                                                        | <i>Symbol Configuration</i> | 60   |

Table 18: Descriptions of the Dialog Panes Configuration



Notice the descriptions in the section *Configuration Steps* on page 18.



**Note:** In order to transfer the configuration to the PROFIBUS MPI device, download the data of the configuration parameters in the PROFIBUS MPI device. See section *Download Configuration* on page 73.

## 4.2 Steps for 'Configuration'

To configure the PROFIBUS MPI device, you must configure the PROFIBUS MPI bus parameters and download them to the device.

If your project is coupled to a PLC via PROFIBUS MPI, you must also create the PLC signal configuration and set the signals for additional processing. Therefore you can import and customize a STEP 7 project in the PROFIBUS MPI DTM or alternatively configure the PLC signals without STEP7 import directly in the process data-editor of the DTM. In the process data-editor, you define all the PLC signals to which the OPC server will access later. The configuration of these signals then is provided for the additional processing in a process-data XML file.

### **Configure and download PROFIBUS MPI Busparameters**

To configure the bus parameters of the PROFIBUS MPI device using the PROFIBUS MPI DTM, you must perform the following steps.

1. Configuration of the PROFIBUS MPI Bus Parameters.
2. Download of the PROFIBUS MPI Bus Parameters.

### **For PLC-Coupling: Signal Configuration with / without STEP7 Project**

*Import and configure STEP7 signals for PROFIBUS MPI:*

1. Import the STEP 7 Project.
2. Configure STEP7 Signals with the Process Data-Editor.
3. Select signals for the additional processing.

Or:

*Configure PLC signals for PROFIBUS MPI without STEP7 project:*

1. Reset „Use PLC Program“.\*
- \* If an imported STEP7 project shall not be used.
2. Configure Signals without STEP 7 Project.
3. Select all signals for the additional processing.

### **Introducing Instructions Step by Step**



See descriptions in the sections:

- Configuring PROFIBUS MPI Bus Parameters, page 50,
- Import and customize a STEP7 Process Data Configuration, page 55,
- Creating a Process Data Configuration without STEP7 Project, page 56 .

## 4.3 Configuring PROFIBUS MPI Bus Parameters

The following steps are required to configure the parameters of the PROFIBUS MPI device using the PROFIBUS MPI DTM:

### Configuration

1. Set the PROFIBUS MPI bus parameters.

- Select **Configuration > Configuration** in the navigation area.



#### **Note**

- Set the Station Address specifically for the PROFIBUS MPI device.
- The baud rate must be set necessarily.
- A change of bus parameters can cause communication failure.

2. Save the Bus Settings.

- Save the bus parameters and close the MPI DTM configuration dialog via **OK**.

OR for projects with PLC-coupling:

- Save the bus parameters via **Apply**.

### Configuration Download to the PROFIBUS MPI Device



**Note:** In order to transfer the configuration to the PROFIBUS MPI device, download the data of the configuration parameters in the PROFIBUS MPI device. See section *Download Configuration* on page 73.

### Further Information



For more information refer to section *Configuration* on page 51 of this document.

## 4.4 Configuration

In the **Configuration** dialog you can configure the bus parameters of a PROFIBUS MPI device. The current PROFIBUS MPI bus parameters required for the communication with the PLC unit, you can access and set offline.



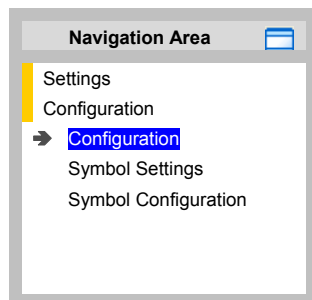
### Note

- Set the Station Address specifically for the PROFIBUS MPI device.
- The baud rate must be set necessarily.
- A change of bus parameters can cause communication failure.

Changes of the bus parameters are transmitted only after downloading the configuration into the device. See section *Download Configuration* on page 73.

### How to do

- Select **Configuration > Configuration** in the navigation area.



- In the **Configuration** dialog the current settings of the bus parameters (offline bus parameters) are displayed. Here you can adjust all parameters which are required for communicating with the PLC unit.

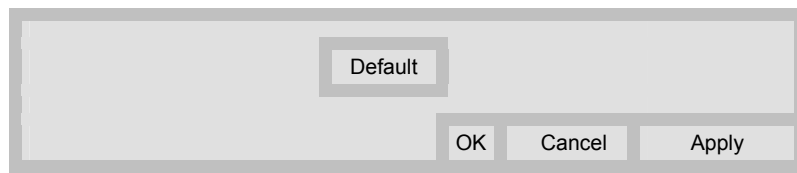
Figure 24: MPI Bus Configuration

- Set the configuration of the PROFIBUS MPI bus parameters.

| Parameter            | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                              | Range of Value/ Value                                                                                                                                                                                          |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Interface</b>     |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                |
| ① Bus Startup        | Communication start application controlled or automatic                                                                                                                                                                                                                                                                                                                                                                                              | Application controlled, Automatic (Default)                                                                                                                                                                    |
| ② Watchdog Time [ms] | Watchdog time within which the device watchdog must be retriggered from the application program while the application program monitoring is activated.<br>When the watchdog time value is equal to 0 the application program monitoring is deactivated.                                                                                                                                                                                              | [0, 20 ... 65535] ms, Default = 1000 ms, 0 = Off                                                                                                                                                               |
| <b>Bus</b>           |                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                                                                                                                                                                                |
| ③ Station Address    | PROFIBUS MPI Address of the device.                                                                                                                                                                                                                                                                                                                                                                                                                  | 0 ... 126, Default: 1                                                                                                                                                                                          |
| ④ Baud Rate          | PROFIBUS MPI Baud Rate<br>Indicates the velocity of transmission: Number of bits per second.<br><br><div>  <b>Important!</b> <ul style="list-style-type: none"> <li>- The <b>Baud Rate</b> setting is <u>mandatory</u>.</li> <li>- The option <i>Auto Detect</i> is only possible if the communication is initiated by another bus participant.</li> </ul> </div> | 9,6 kBit/s,<br>19,2 kBit/s,<br>31,25 kBit/s,<br>45,45 kBit/s,<br>93,75 kBit/s,<br>187,5 kBit/s,<br>500 kBit/s,<br>1,5 MBit/s,<br>3 MBit/s,<br>6 MBit/s,<br>12 MBit/s,<br>Auto Detect,<br>Default: 187,5 kBit/s |

| Parameter                                                                                                                                                                                                                                                                                                                       | Meaning                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Range of Value/ Value                   |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| ⑤ Slot Time                                                                                                                                                                                                                                                                                                                     | Slot Time ( $T_{SL}$ )<br>'Wait for receipt' – monitoring time of the Senders (Requestor) of telegram for the acknowledgement of the recipient (Responder). After expiration, a retry occurs in accordance with the value of 'Max. telegram retries'.                                                                                                                                                                                                                                    | 37 ... 16383 tBit,<br>Default: 415 tBit |
| ⑥ Min. Station Delay Responder                                                                                                                                                                                                                                                                                                  | Minimum Station Delay of Responders ( $\min T_{SDR}$ )<br>This is the shortest time period that must elapse before a remote recipient (Responder) may send an acknowledgement of a received query telegram. The shortest time period between receipt of the last Bit of a telegram to the sending of the first Bit of a following telegram.                                                                                                                                              | 1 ... 1023 tBit,<br>Default: 60 tBit    |
| ⑦ Max. Station Delay Responder                                                                                                                                                                                                                                                                                                  | Maximum Station Delay of Responders ( $\max T_{SDR}$ )<br>This is the longest time period that must elapse before a Sender (Requestor) may send a further query telegram. Greatest time period between receipt of the last Bit of a telegram to the sending of the first Bit of a following telegram.<br><br>The Sender (Requestor, Master) must wait at least for this time period after the sending of an unacknowledged telegram (e.g. Broadcast only) before a new telegram is sent. | 1 ... 1023 tBit,<br>Default: 400 tBit   |
| ⑧ Quiet Time                                                                                                                                                                                                                                                                                                                    | Quiet Time ( $T_{QUI}$ )<br>This is the time delay that occurs for modulators (Modulator-trip time) and Repeaters (Repeater-switch time) for the change over from sending to receiving.                                                                                                                                                                                                                                                                                                  | 0 ... 127 tBit,<br>Default: 1 tBit      |
| ⑨ Setup Time                                                                                                                                                                                                                                                                                                                    | Setup Time ( $T_{SET}$ )<br>Minimum period "reaction time" between the receipt of an acknowledgement to the sending of a new query telegram (Reaction) by the Sender (Requestor).                                                                                                                                                                                                                                                                                                        | 1 ... 255 tBit,<br>Default: 1 tBit      |
| ⑩ Target Rotation Time                                                                                                                                                                                                                                                                                                          | Target Rotation Time ( $T_{TR}$ )<br>Pre-set nominal Token cycling time within the Sender authorization (Token) will cycle around the ring. How much time still is available for sending data telegrams is dependent on the difference between the nominal and the actual token cycling time.                                                                                                                                                                                            | $\geq 255$ tBit,<br>Default: 10000 tBit |
| ⑪ GAP Actualization Factor                                                                                                                                                                                                                                                                                                      | GAP Actualization Factor (G)<br>Factor for determining after how many Token cycles an added participant is accepted into the Token ring. After expiry of the time period $G \cdot TTR$ , the Station searches to see whether a further participant wishes to be accepted into the logical ring.                                                                                                                                                                                          | 1 ... 255,<br>Default: 20               |
| ⑫ Highest Station Address                                                                                                                                                                                                                                                                                                       | Highest Station Address ( $H_{SA}$ )<br>Station address of the highest active (Master) station.                                                                                                                                                                                                                                                                                                                                                                                          | 1 ... 126,<br>Default: 31               |
| ⑬ Max. Retry Limit                                                                                                                                                                                                                                                                                                              | Max number of telegram retries (Max_Retry_Limit)<br>Maximum number of repetitions allowed for reaching a station.                                                                                                                                                                                                                                                                                                                                                                        | 1 ... 8,<br>Default: 1                  |
| Bit times: All times for the Bus parameters are given in Bit times. The Bit time tBit is the result of the reciprocal of the Baud rate: $tBit = 1 / \text{Baud rate}$ (Baud rate in Bit/s)<br>The conversion from milliseconds into a Bit time is shown in the following formula:<br>Bit time = Time [milliseconds] * Baud rate |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                         |

Table 19: Parameters - PROFIBUS MPI

**Default, Apply, OK, Cancel in the „Configuration” Dialog**

- Reset the bus settings to their default value via **Default**.
- Or save the bus settings via **Apply**.
- The PROFIBUS MPI DTM configuration dialog remains opened.
- Or save the bus settings via **OK**.
- The PROFIBUS MPI DTM configuration dialog is closed.
- Or undo the bus settings via **Cancel**.
- The PROFIBUS MPI DTM configuration dialog is closed.

## 4.5 Process Data Configuration (for PLC-Coupling)

For projects with a PLC coupling, you can

- **either** import and customize the process data configuration as STEP7 project
- **or** you can create the process data configuration manually without STEP7 project.

### 4.5.1 Import and customize a STEP7 Process Data Configuration

Configure the signals for PROFIBUS MPI with the STEP7 project:



**Important!** All changes made in the **Symbol Configuration** dialog are lost when the STEP7 project is imported repeatedly (new-import) and the changes do not affect the function of the PLC in which the STEP7 program was loaded.

1. Select and import STEP7 project
  - Select **Configuration > Symbol Settings** in the navigation area.
  - In the **Symbol Settings** dialog check **General > Use PLC Program**.
  - Select a STEP7 project via **Browse....**
  - Import the project via **Open**.
  - Save the project via **Apply**.
2. Customize the imported STEP7 Signal Configuration.
  - Select **Configuration > Symbol Configuration** in the navigation area.



**Important!** Under **Station Address** enter the PLC station address. The station address of the STEP7 project may not be used here.

- Respectively customize the signal configuration.
3. Select the PLC signals for the additional processing.
    - Under **SCADA** check all signals for the additional processing.
    - Close the PROFIBUS MPI DTM configuration dialog via **OK**.



Further information you will find in the sections of this document as listed hereafter: *Import the STEP 7 Project* on page 57 and *Configure STEP7 Signals with the Process Data-Editor* on page 60.

## 4.5.2 Creating a Process Data Configuration without STEP7 Project

Configure the signals for PROFIBUS MPI without a STEP7 project.

1. Reset Import Settings (if set).
  - Select **Configuration > Symbol Settings** in the navigation area.\*
  - Remove the hook under **Use PLC Program**.\*

\*If an imported STEP7 project shall not be used.



**Important!** If you remove the hook **Use PLC Program**, any settings on the signal configurations made in the **Symbol Configuration** dialog will be lost. Thereby also any signal configurations in the OPC server will be lost.

2. Create the signal configuration manually.
  - Select **Configuration > Symbol Settings** in the navigation area.
  - Create in the **Symbol Configuration** dialog the signal configuration for the PROFIBUS MPI device. E. i., configure the modules and signals.



**Important!** Under **Station Address** enter the PLC station address. It is not allowed to use the station address of the STEP7 project here.

- In the first line for *Device\_1* enter the **Station Address**.
  - In the second line for *Module\_1* select the **Module Type**.
  - In the third line for *Singal\_1* configure **Access**, **Memory area**, **Data Type**, **Offset** and **Bit-Number**.
  - If necessary, add and configure additional modules and signals.
3. Select the PLC signals for the additional processing.
    - Under **SCADA** check all signals for the additional processing.
    - Close the PROFIBUS MPI DTM configuration dialog via **OK**.



Further information you will find in the sections of this document as listed hereafter: *Reset „Use PLC Program“* on page 59 and *Configure Signals without STEP 7 Project* on page 59.

## 4.6 Symbol Settings

In the **Symbol Settings** dialog you can select a STEP7 project file for the reason of data import (see section *Import the STEP 7 Project* on page 57).

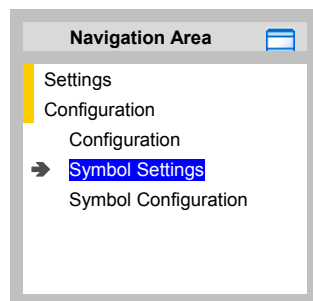
If no STEP 7 project shall be imported and if previously a STEP7 project has been imported that should not be used, these import setting must be reset (see section *Reset „Use PLC Program“* on page 59).

### 4.6.1 Import the STEP 7 Project

In a project with direct PLC-coupling via PROFIBUS MPI, the signals from the STEP7 project will be used for the additional processing.

#### How to proceed

- To import the STEP7 project file, select **Configuration > Symbol Settings** in the navigation area.



- In the **Symbol Settings** dialog click and check **Use PLC Program** ①.

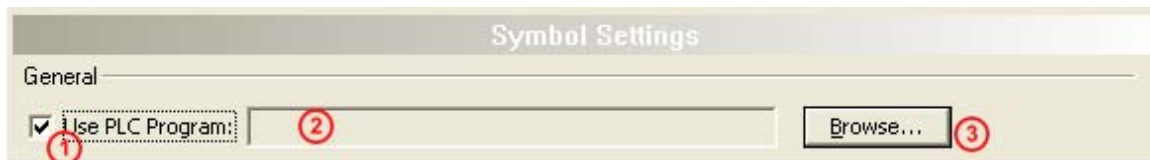


Figure 25: Browse STEP7 Project File to import it



**Important!** If you have made in the **Symbol Configuration** dialog the settings for the signal configuration, in the **Symbol Settings** dialog you may not uncheck **Use PLC Program**. Otherwise any settings on the signal configurations made will be lost. Thereby also any signal configurations in the OPC server will be lost.

- In the **Use PLC Program** ② field enter the directory path and the name for the STEP7 project file.

Or

- Click **Browse...** ③.

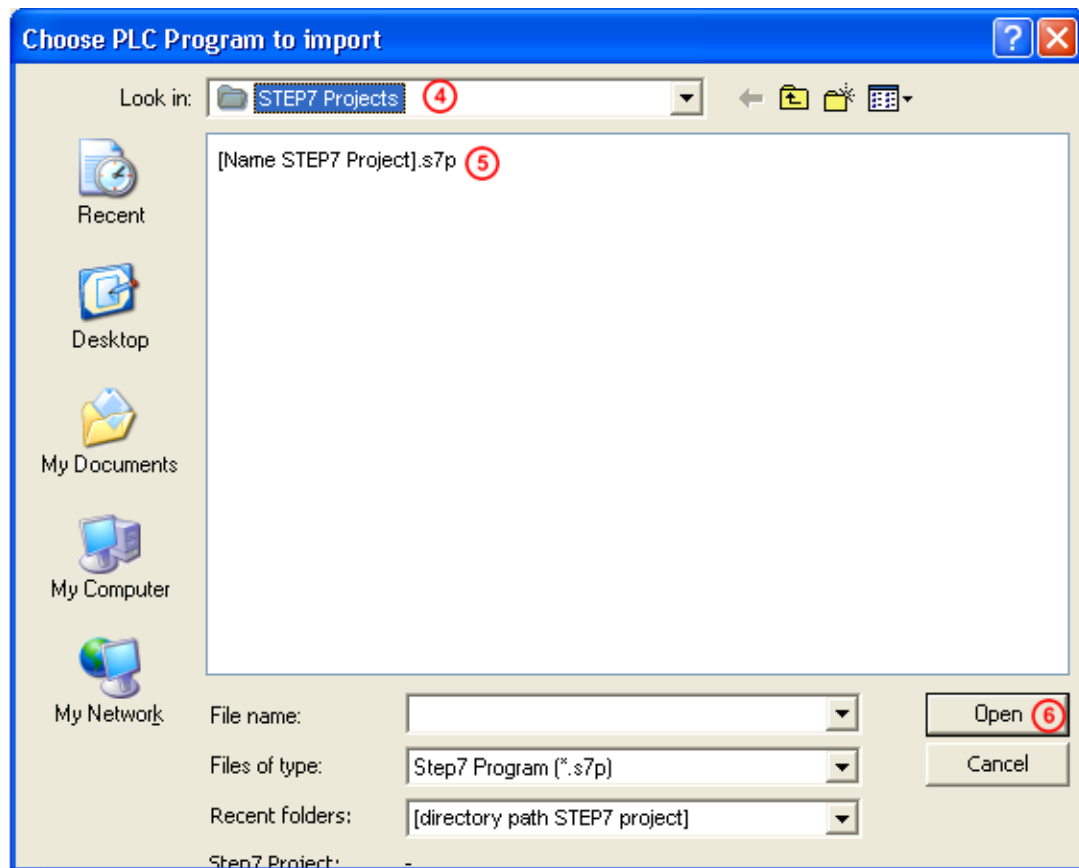


Figure 26: File Selection Dialog, select and open STEP7 Project File

- Select the STEP7 project file in the file selection dialog; see ④, ⑤.
- Click **Open** ⑥.
- The file selection dialog is closed and in the dialog **Symbol Settings** the name of the selected STEP7 project file is displayed ⑦.

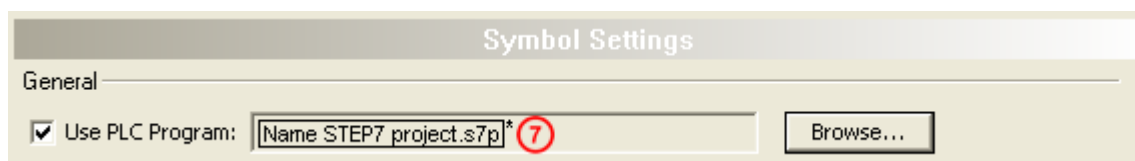


Figure 27: Import STEP7 Project

### **Default, Apply, OK, Cancel in the „Symbol Settings ” Dialog**



- Import the STEP7 project data via **Apply**.
- The PROFIBUS MPI DTM configuration dialog remains opened.
- Or import the STEP7 project data via **OK**.
- The PROFIBUS MPI DTM configuration dialog is closed.
- Or undo the STEP7 project data via **Cancel**.
- The PROFIBUS MPI DTM configuration dialog is closed.

## 4.6.2 Reset „Use PLC Program“

You need to reset the import setting **Use PLC program** only, if you want to discard a signal configuration imported via a STEP 7 project file.



**Important!** If you uncheck **Use PLC Program**, all the configuration settings for signal configurations made in the **Symbol Configuration** dialog are lost. So all signal configurations in the OPC Server are lost.

### How to proceed

- To reset the import settings **Configuration > Symbol Settings** in the navigation area.
- Click an uncheck **Use PLC Program** ①.

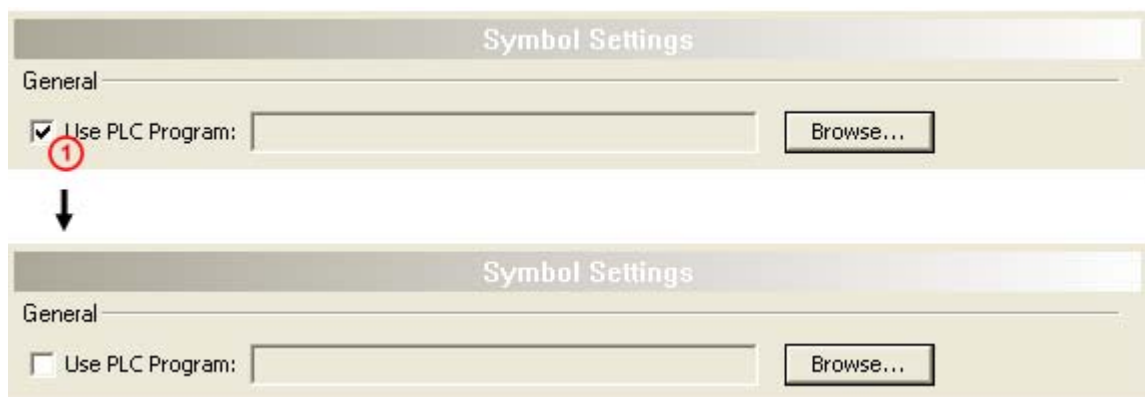


Figure 28: Reset „Use PLC Program“

### Default, Apply, OK, Cancel in the „Symbol Settings ” Dialog



- Save the new-import settings via **Apply**.
  - The PROFIBUS MPI DTM configuration dialog remains opened.
- Or save the new-import settings via **OK**.
  - The PROFIBUS MPI DTM configuration dialog is closed.
- Or undo the new-import settings via **Cancel**.
  - The PROFIBUS MPI DTM configuration dialog is closed.

## 4.7 Symbol Configuration

For the data transfer from a PLC and for the process data configuration you can use the **Symbol Configuration** dialog in the PROFIBUS MPI DTM as an Editor (Process Data-Editor). The dialog enables a data transfer from a STEP7 project and additionally serves as process data interface for transferring data to an OPC client.

If you import the process data configuration of a STEP 7 project, the **PDI Editor Table** lists the on the PROFIBUS MPI device connected MPI-enabled device (mostly a SPS unit) and the on the device configured modules and the input signals and output signals. In the process data-editor you can alternatively configure a complete data transfer from a PLC, without a STEP7 project. Therefore you must manually configure the modules and input signals and output signals of the SPS unit. To the modules and measuring signals symbolic names can be assigned. Finally you must select in the process data-editor which signaling data must be available on the OPC server for the processing.

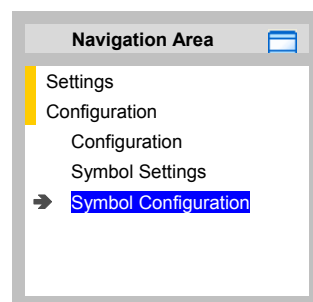
Detailed descriptions of the process data configuration can be found in sections *Configure STEP7 Signals with the Process Data-Editor* on page 60 and *Configure Signals without STEP 7 Project* on page 69.

### 4.7.1 Configure STEP7 Signals with the Process Data-Editor

For the data transfer from a PLC and to configure the PLC signals on the PROFIBUS MPI device via a STEP7 project, in the PROFIBUS MPI DTM you first need to import a STEP7 project file, as described in section *Import the STEP 7 Project* on page 57. Customize the imported signal configuration then in the process data-editor (**Symbol Configuration** dialog), as described below.

#### How to proceed in the Process Data-Editor

- Open the process data-editor via **Configuration > Symbol Configuration**.



- The **Symbol Configuration > PDI Editor Table** dialog is displayed.

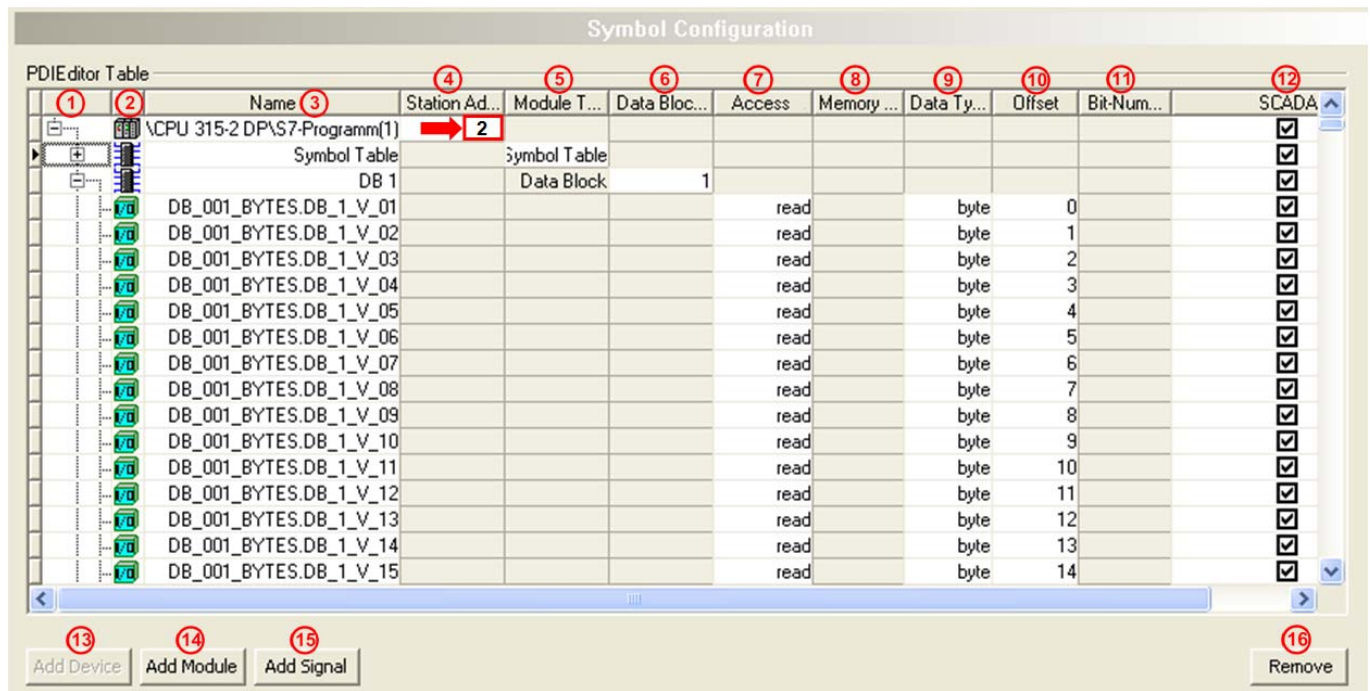


Figure 29: STEP7 Signal Configuration (Example)

| PDI Editor Table    | Meaning                                                                                                                                                                                                                                                                                                       | Range of Value/ Value                                                                                                              |
|---------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------|
| ① Tree Structure    | Shows the structure of the „Devices“, „Modules“ and „Signals“.                                                                                                                                                                                                                                                |                                                                                                                                    |
| ② Symbol            | Symbol for „Device“ =  , „Module“ =  or „Signal“ =  |                                                                                                                                    |
| ③ Name              | Editable name for the „Devices“, „Modules“ and „Signals“:<br>With STEP7 import the names of the STEP7 program, of the symbol table or of the data block and the signal are displayed. Without import the default names <i>Device</i> , <i>Module</i> , <i>Signal</i> are displayed.                           |                                                                                                                                    |
| ④ Station Address   | (only for devices)<br>PLC address of the PROFIBUS MPI device<br> <b>Important!</b> Here the <u>PLC station address</u> must be entered. The station address of the STEP7 project may not be used here.                     | 1 ... 126                                                                                                                          |
| ⑤ Module Type       | (only for modules)<br>Module type <i>Symbol Table</i> : The STEP7 symbol table is used. The S7 memory areas are valid.<br>Module type <i>Data Block</i> : The data blocks <b>DB1</b> , <b>DB2</b> ... are used. The memory areas of the data blocks are valid.                                                | <i>Symbol Table</i> ,<br><i>Data Block</i>                                                                                         |
| ⑥ Data Block Number | (only for modules)<br>Number of the data block,<br>(only editable if „Module Type“ = <i>Data Block</i> )                                                                                                                                                                                                      |                                                                                                                                    |
| ⑦ Access            | (only for signals)<br>Indicates, if the OPC client can „read“, „write“ or „read/write“ the value of the signal..                                                                                                                                                                                              | <i>read</i> ,<br><i>write</i> ,<br><i>read_write</i>                                                                               |
| ⑧ Memory area       | (only for signals)<br>Memory areas of the PLC (S7);<br>(can only be selected, if „Module Type“ = <i>Symbol Table</i> )<br>Selectable memory areas:<br><b>I</b> = Input<br><b>Q</b> = Output<br><b>M</b> = Merker<br><b>C</b> = Counter<br><b>T</b> = Timer                                                    | <i>I</i> , <i>Q</i> , <i>M</i> , <i>C</i> , <i>T</i>                                                                               |
| ⑨ Data Type         | (only for signals)<br>Option for the data type of a signal. For the data type <i>bit</i> also the <b>Bit-Number</b> must be selected.<br>Details on the STEP7 data types are listed in section <i>STEP7 Data Types</i> page 67.                                                                               | <i>bit</i> , <i>byte</i> , <i>word</i> ,<br><i>signed16</i> , <i>dword</i> ,<br><i>signed32</i> , <i>real32</i> ,<br><i>string</i> |

| PDI Editor Table                                             | Meaning                                                                                                                                                                                                                                                                                                                                                                                 | Range of Value/ Value     |
|--------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|
| <b>⑩ Offset</b>                                              | (only for signals)  <b>Important!</b> "Offset" should never be without a value for a signal.                                                                                                                                                                                                           |                           |
| <b>⑪ Bit-Number</b>                                          | (only for signals) Exact addressing of a bit within a byte.<br>(only editable if "Data Type" = bit)                                                                                                                                                                                                                                                                                     |                           |
| <b>⑫ SCADA</b><br>[Supervisory Control and Data Acquisition] | (only for signals) Option which module or signal data will be made available for processing at the OPC server. Alternatively single or all signals of a data block can be selected.<br><br>The signals selected here are transmitted also to the item server of the PROFIBUS MPI device and must be considered when calculating the maximum number of transferable item server signals. | <i>checked, unchecked</i> |
| <b>⑬ Add Device</b>                                          | Only enabled, if the device  was deleted.<br>➤ Then click on <b>Add Device</b> .<br>⇒ A <u>signal device (S7)</u> is added.                                                                                                                                                                            |                           |
| <b>⑭ Add Module</b>                                          | ➤ First, click on the device  to configure.<br>➤ Then click <b>Add Module</b> .<br>⇒ A <u>new symbol table (one per device)</u> or a <u>new data block</u> is inserted at the end of the module list of the selected device.                                                                           |                           |
| <b>⑮ Add Signal</b>                                          | ➤ Click on the first module  to be configured.<br>➤ Then click on <b>Add Signal</b> .<br>⇒ The <u>new signal</u> is added to the module at the end of its signal list.                                                                                                                                 |                           |
| <b>⑯ Remove</b>                                              | ➤ First click to the signal object to remove (device, module, signal).<br>➤ Then click <b>Remove</b> .<br>⇒ The selected signal object is removed.                                                                                                                                                                                                                                      |                           |
| <b>Error Messages</b>                                        | Error messages of the process data-editor can be found in section <i>Error Messages of the Process Data Editor</i> on page 64 .                                                                                                                                                                                                                                                         |                           |

Table 20: Explanations PDI Editor Table

- Under **Station Address ④** enter the PLC Station Address.
- Respectively customize the signal configuration via **⑭ Add Module**, **⑮ Add Signal** and **⑯ Remove**, as described in section *Configure Signals without STEP 7 Project* on page 69.
- Under **SCADA** check the signals for the additional processing.

*Further see next page.*

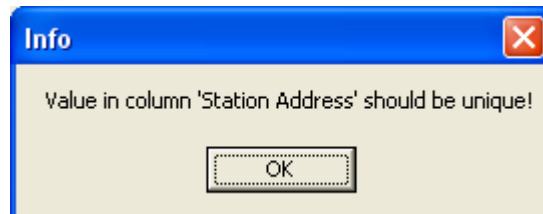
**Default, Apply, OK, Cancel in the „Symbol Settings ” Dialog**

- Save the new-import settings via **Apply**.
- ↻ The PROFIBUS MPI DTM configuration dialog remains opened.
- ↻ Or save the new-import settings via **OK**.
- ↻ The PROFIBUS MPI DTM configuration dialog is closed.
- Or undo the new-import settings via **Cancel**.
- The PROFIBUS MPI DTM configuration dialog is closed.

## 4.7.2 Error Messages of the Process Data Editor

The following error situations may occur when configuring using the Process Data-Editor:

1. **Input Error Station Address** ④ (compare figure *STEP7 Signal Configuration (Example)* on page 61).
  - If an already used station address has been used as station address again, the following error message will appear:

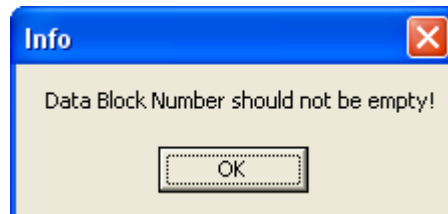


**Value in column „Station Address“ should be unique!**

Figure 30: Error Message Box indicating a non-unique Station Address

- Click at **OK**.
- Enter in the **PDI Editor Table** under **Station Address** ④ a unique value for the station address. This value must not have been used within the network configuration for any other device.

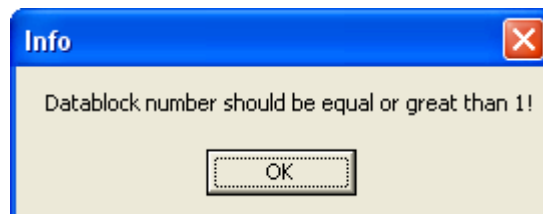
2. **Input Error Data Block Number** ⑥ (compare figure *STEP7 Signal Configuration (Example)* on page 61).
  - If the input field of the data block number is empty, the following message box will be displayed:



**Data Block Number should not be empty!**

Figure 31: Error Message Box indicating an empty Data Block Number has been specified

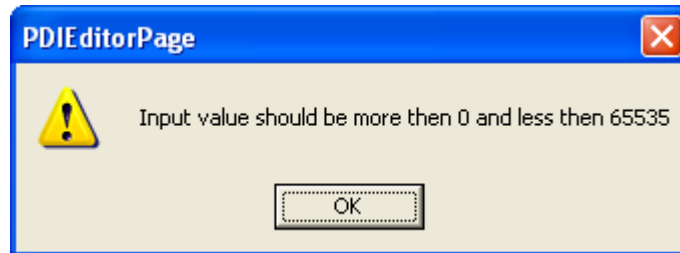
- Attempts to specify the value 0 for the data block number will cause issuing of this error message:



**Data Block Number should be equal or greater than 1!**

Figure 32: Error Message Box indicating a Data Block Number equal to 0

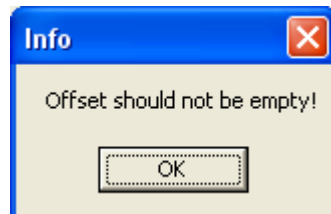
- Attempts to specify a negative value as data block number will be suppressed.
- Attempts to specify a value exceeding the allowed address range (0 to 65535) of the data block number will cause issuing of this error message:



**Input value  
should be more  
then 0 and less  
then 65535**

Figure 33: Error Message Box indicating a Violation of the Range of Values allowed for the Data Block Number

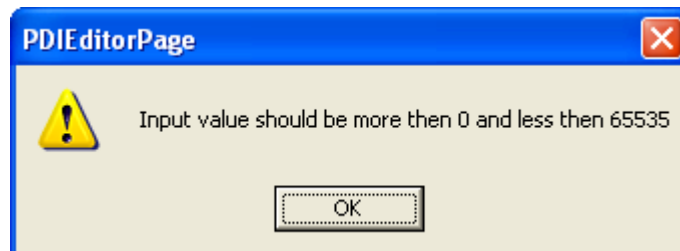
- Click at **OK**.
  - Specify in the **PDI Editor Table** under **Station Address** ④ for the station address a correct value of the defined range between 0 and 65535.
3. **Input error Offset** ⑩ (compare figure *STEP7 Signal Configuration (Example)* on page 61).
- If the input field of the offset is empty, the following message box will be displayed:



**Offset should not be empty!**

Figure 34: Error Message Box indicating an empty Offset Field

- Attempts to specify a negative value as Offset will be suppressed.
- Attempts to specify a value violating the allowed address range for Offset (0 to 65535) will cause issuing of this error message:



**Input value should  
be more then 0  
and less then  
65535**

Figure 35: Error Message Box indicating a Violation of the Range of Values allowed for the Offset

### 4.7.3 Data Loss for New-Import, How to proceed for the Data Update

Note the following details to avoid data loss when working with process data-editor and to consider additional changes of data in a way that makes sense.

#### **Take care, Changes can be lost when a New-Import is made**



**Important!** All changes made in the **Symbol Configuration** dialog are lost when the STEP7 project is imported repeatedly (new-import)! Thereby also any signal configurations in the OPC server will be lost.

Changes made in the **Symbol Configuration** dialog do not affect the function of the PLC in which the STEP7 program was loaded.

#### **How to handle in Case of additional Changes of the STEP7 Project**

When changes are made to the imported STEP7 project, if the signal configuration in the process data editor and in the OPC server are completed, you must estimate on the basis of the expected effort, how you will include these changes into the OPC Server.

Therefore you have two options:

1. New-Import of the STEP7 Project.

This has the consequence that all signal configurations made previously will be lost.

2. Additional Configuration of the Changes in the STEP7 Project in the Configuration of the OPC Server using the Process Data-Editor.

The advantage: In the OPC Server all previously made signal configurations are preserved.

To make an additional manual change of the PLC signal configuration in the process data-editor, you have the same options as when you configure a complete data transfer from a PLC manually. Further details you find in section *Configure Signals without STEP 7 Project* on page 69..

## 4.7.4 STEP7 Data Types

### 4.7.4.1 Support of the Process Data Editor

In the process data-editor (**Symbol Configuration** dialog) data can be read from or written to the data blocks DB and from/to the symbol area of the PLC. The symbol area includes the areas:

- *Merker* (M, MB, MW, MD)
- *Counter* (C)
- *Timer* (T)
- *Input Area* (I)
- *Output Area* (O)

#### Simple STEP7 Data Types and Conversions

| Data type          | Description                                                                                                                                   | Range of values<br>Lower limit                     | Range of values<br>Upper limit | PDI<br>Data Type |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------------------------------|------------------|
| <i>BOOL</i>        | Data type for Boolean values. Data are each stored within a single bit. The range of possible values only contains the values TRUE and FALSE. | FALSE                                              | TRUE                           | <i>Bit</i>       |
| <i>BYTE</i>        | Unsigned 8 bit integer data type                                                                                                              | 0                                                  | 255                            | <i>Byte</i>      |
| <i>WORD</i>        | Unsigned 16 bit integer data type                                                                                                             | 0                                                  | 65535                          | <i>Word</i>      |
| <i>INT</i>         | Signed 16 bit integer data type                                                                                                               | -32768                                             | 32767                          | <i>Signed16</i>  |
| <i>DWORD</i>       | Unsigned 32 bit integer data type                                                                                                             | 0                                                  | $2^{32} - 1$                   | <i>DWord</i>     |
| <i>DINT</i>        | Signed 32 bit integer data type                                                                                                               | $-2^{31}$                                          | $2^{31} - 1$                   | <i>Signed32</i>  |
| <i>REAL</i>        | Signed 32 bit floating point data type with exponential representation                                                                        | +/-<br>1.175495e-38                                | +/-<br>3.402823e+38            | <i>Real32</i>    |
| <i>CHAR</i>        | 8 bit character data type for storing single ASCII characters. Internal processing as being of type BYTE.                                     | All ASCII characters allowed                       |                                | <i>Byte</i>      |
| <i>S5TIME</i>      | Unsigned 16 bit data type for storage of the S7®-internal time in steps of 10 milliseconds. Internal processing as being of type WORD.        | Valid time specification<br>0H_0M_0S_0MS           | 2H_46M_30S_0MS                 | <i>Word</i>      |
| <i>DATE</i>        | Unsigned 16 bit data type for storage of the IEC-time in steps of 1 day. Internal processing as being of type WORD.                           | Valid date<br>1990-1-1                             | 2168-12-31                     | <i>Word</i>      |
| <i>TIME</i>        | Signed 32 bit data type for storage of the IEC-time in steps of 1 millisecond. Internal processing as being of type DWORD.                    | Valid time specification<br>-24D_20H_31M_23S_648MS | 24D_20H_31M_23S_647MS          | <i>DWord</i>     |
| <i>TIME_OF_DAY</i> | 32 bit data type for storage of the clock time in steps of 1 millisecond. Internal processing as being of type DWORD.                         | Valid time of day<br>0:0:0.0                       | 23:59:59.999                   | <i>DWord</i>     |

Table 21: Simple STEP7 Data Types / Conversions

### **Composite STEP7 Data Types**

- ARRAY

This is a data type for a field, i.e. a group of elements of the same type.

- STRING

This is a data type for strings consisting of concatenated characters.

#### **4.7.4.2 Unsupported Data Types**

The following structured STEP7 data types are not supported in the process data-editor (**Symbol Configuration** dialog).

- STRUCT

This is a data type for structures of multiple elements consisting of usually different data types.

- DATE\_AND\_TIME

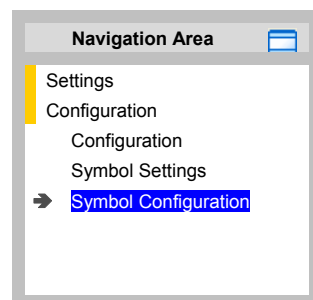
User-defined STEP7 data types and other data types not mentioned here are not supported in the process data-editor.

## 4.7.5 Configure Signals without STEP 7 Project

For the data transfer from a PLC and to configure the PLC signals on the PROFIBUS MPI device without a STEP7 project, you need to reset a previously-made import setting in the PROFIBUS MPI DTM as it is described in section *Reset „Use PLC Program“* on page 59. Then create the signal configuration in the process data-editor (**Symbol Configuration** dialog) manually as described below. A description of the process data-editor you find in the table *Explanations PDI Editor Table* on page 62.

### How to proceed in the Process Data-Editor

- Open the process data-editor via **Configuration > Symbol Configuration**.



- The **Symbol Configuration > PDI Editor Table** dialog is displayed.

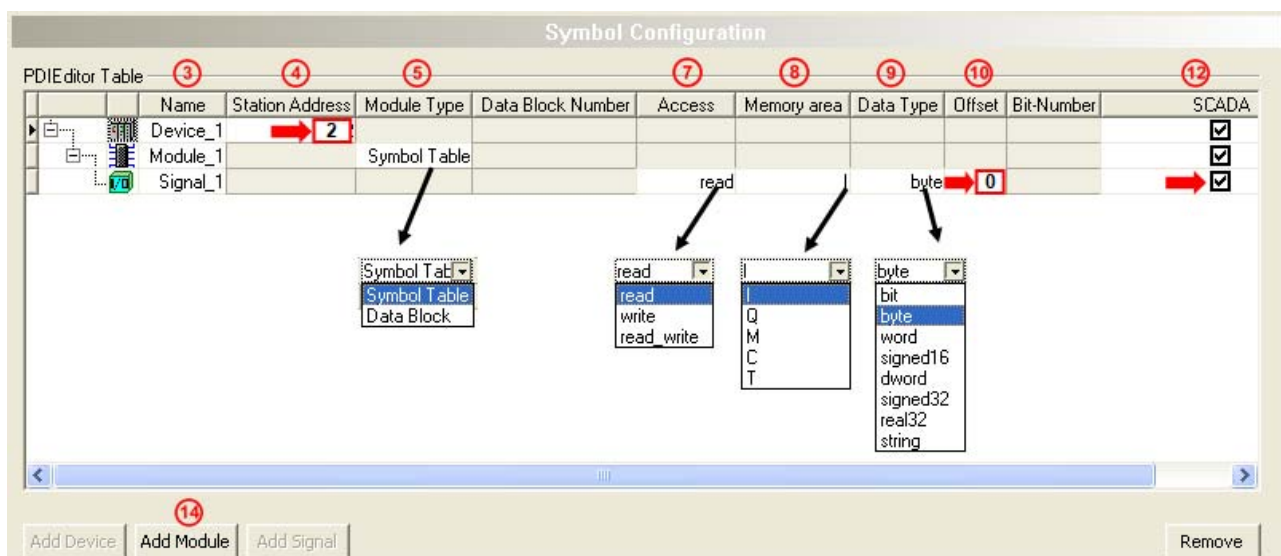


Figure 36: PLC Signal Configuration without STEP7 Project (1)

The **PDI Editor Table** shows the three standard entries for the PLC signal configuration of a PROFIBUS MPI communication

- *Device\_1*,
- *Module\_1* and
- *Signal\_1*.

The first line for *Device\_1* under **Station Address** ④ you must enter, which station address the PROFIBUS MPI device in the MPI network has.

The second line for *Module\_1* contains under **Module Type** ⑤ the entry for a „*Symbol Table*“.

If you do not want to read data from the symbol table of the PLC, you can also assign the module type „*Data Block*“ to the entry *Modul\_1*.

In the third line the *Singal\_1* is entered.

For a signal from the symbol table of the PLC (module of the type *Symbol Table*) you need to make the configuration steps listed below:

1. **Access** ⑦ for write/read access to the signal
2. **Memory area** ⑧, areas I, Q, M, C, T of the PLC(S7)
3. **Data Type** ⑨ (bit, byte, word ...), for the signal characteristics, such as length, floating decimal point / fixed decimal point, signs, etc.
4. **Offset** ⑩ of the signal in the module of the type *Symbol Table* according to the STEP7 configuration (mandatory input)
5. **Bit-Number** ⑪ (only for the data type bit).
6. **SCADA** ⑫ must be checked, to provide the signal at the OPC server.

Please note also the descriptions in the table *Explanations PDI Editor Table* on page 62.

### Add Device

**Add Device** ⑬ is only active, if the **PDI Editor Table** does not provide any device.

- To add a PLC , click **Add Device** ⑬.
- A new line with a device is added.

### Add Module

- To add an additional module  (**Data Block**) to a device, you must select in the table the line of the device, to which you want to add the module.
- Then click **Add Module** ⑭.
- A new module is inserted at the lower end of the module list of the selected device.

If you have added a module with two signals, the PDI Editor Table looks like shown hereafter:

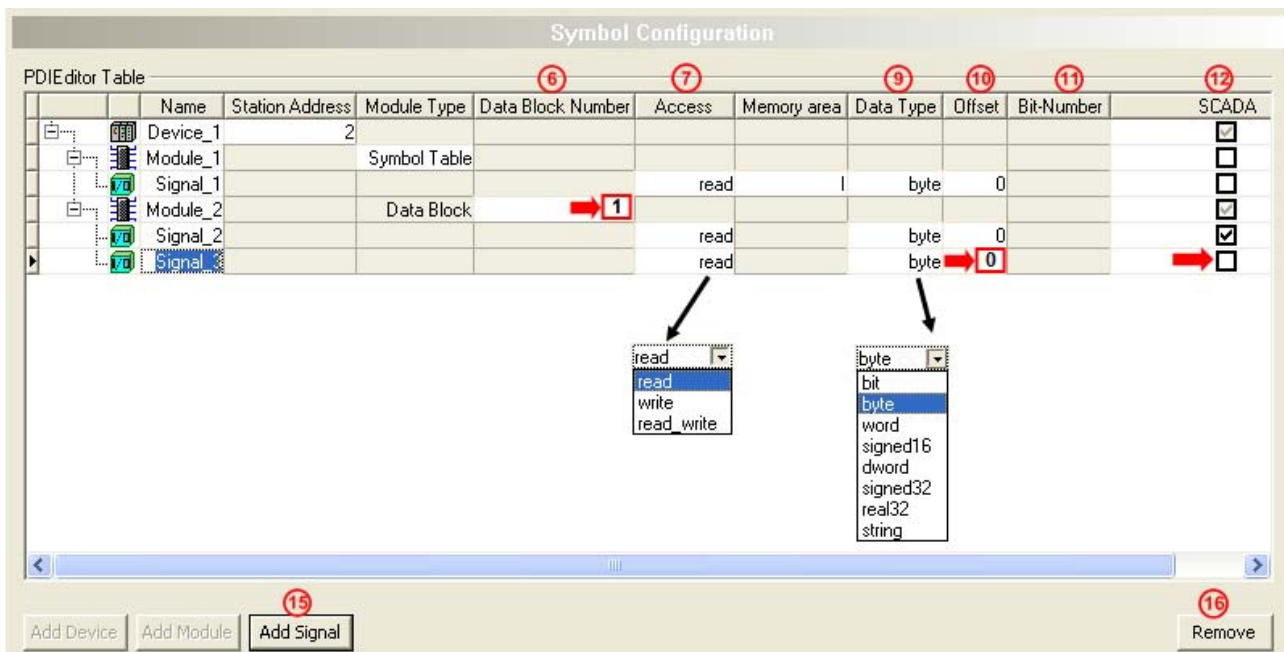


Figure 37: PLC Signal Configuration without STEP7 project (2)

- Enter for the new data block  (new module) in the column (6), the data block number from the STEP7 project.

### Configure Signal

For a signal from a module of the type *Data Block* you need to make the configuration steps listed below:

1. **Access** (7) for write/read access to the signal
2. **Data Type** (9) (bit, byte, word ...), for the signal characteristics, such as length, floating decimal point / fixed decimal point, signs, etc.
3. **Offset** (10) of the signal in the module of the type Data Block according to the STEP7 configuration (mandatory input)
4. **Bit-Number** (11) (only for the data type bit).
5. **SCADA** (12) must be checked, to provide the signal at the OPC server.

### Add Signal

- To add a signal to a module, you must select in the table the line of the module, to which you want to add a signal.
- Then click **Add Signal** (15).
- The signal is inserted at the lower end of the module's signal list.

In this way, you can add additional modules and signals to an already imported STEP7 project.

### Remove Table Entries

- Mark the line of the table where the entry to remove is.
- Then click **Remove** (16).

## 5 Online Functions

### 5.1 Connecting/Disconnecting Device



**Note:** Several PROFIBUS MPI DTM functions e. g. **Diagnosis** or the configuration download in the FDT Framework require an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device.

#### Connecting Device

The following steps are needed to establish a connection from the PROFIBUS MPI DTM to a PROFIBUS MPI device:

Under **Settings** in the **Driver** pane:

1. Select one or several drivers.
2. Configure the driver if necessary.

Under **Settings** in the **Device Assignment** pane:

3. Scan for the devices (with or without firmware).
4. Select the devices (with or without firmware) and apply the selection.

Under **Settings** in the **Firmware Download** pane if not yet a firmware was loaded to the device:

5. Select and download the firmware.

Under **Settings** in the **Device Assignment** pane if not yet a firmware was loaded to the device:

6. Scan for the device (with firmware) once more.
7. Select the device (with firmware) once more.



An overview of the descriptions for these steps you find in the section *Overview Settings* on page 24.

8. In the DTM interface dialog select the **OK** button, to apply the selection and to close the DTM interface dialog.
9. Put a right-click on the PROFIBUS MPI device icon.
10. Select the **Connect** command from the context menu.

➤ The PROFIBUS MPI device now is connected to the PROFIBUS MPI DTM via an online connection. In the network view the device description at the device icon of the PROFIBUS MPI device is displayed with a green colored background.

### **Disconnecting Device**

To disconnect an online connection from the PROFIBUS MPI device to a PROFIBUS MPI DTM take the following steps:

1. In the DTM interface dialog select the **OK** button, to close the DTM interface dialog.
  2. Right-click on the PROFIBUS MPI device icon.
  3. Select the **Disconnect** command from the context menu.
- In the network view the device description at the device icon of the Master is not any more displayed with a green colored background. Now the PROFIBUS MPI device is disconnected from the DTM.

## **5.2 Download Configuration**



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**Note:** To download configuration parameter data to the PROFIBUS MPI device an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device is required.

---

To transfer the configuration with the corresponding parameter data to the PROFIBUS MPI device you download the data to the PROFIBUS MPI device using the frame application of the configuration software.

Whether a device supports the **Download** function depends on the manufacturer. For **netDevice** the download is made via **Device > Download** or use the context menu with **Download**.

### **Further information**



- Information on how to establish an online connection you can find in the section *Connecting/Disconnecting Device* on page 72.
  - Information about whether your device supports the **Download** function you find in the device manual from the manufacturer.
  - Information about the **Download** function in **netDevice** you find in the operating instruction manual **netDevice** and **netProject**, which is also accessible online.
-

## 5.3 Licenses

Using the license dialog, you can order licenses for **Master protocols** or **Utilities** and download them to your device.

### 5.3.1 Open License Dialog

You first open the **License** window.



---

**Note:** You first need to assign the Controller device to the DTM. Only then the device data and the licenses already present in the device are displayed in the **License** dialog.

---

How to proceed:

#### A.) Assigning the Controller device to the DTM

1. Open the DTM configuration dialog.
  - In the FDT container **netDevice** double click to the device icon.
2. Select one or several driver/s.
  - Select **Settings > Driver**.
  - Check the driver/s.
3. Configure the driver, if necessary.
  - Select **Settings > Driver > [Name of the assigned driver]**.
  - Configure the driver settings.
4. Scan for and select the device/s.
  - Select **Settings > Device Assignment**.
  - Under **Device selection** select *suitable only* or *all* and then **Scan**.
  - In the table check the required device/s.
  - Select **Apply**.
5. Close the DTM configuration dialog via **OK**.



---

For details to the device assignment, refer to section *Overview Settings* on page 24.

---

#### B.) Open the License pane

- In the FDT container **netDevice** right click to the device icon.
- From the context menu select **Additional Functions > License**.
- The **License pane** opens.

### 5.3.2 License Dialog

In the **License**<sup>1</sup> pane you can:

- check, which licenses for Master protocols or Utilities are present in the device (Position ① in the figure below),
- order licenses (Positions ② to ⑪),
- transfer licenses to the device ⑫.

netDevice - License

License Type ①

|                             | Existing | Order ②                  |
|-----------------------------|----------|--------------------------|
| <b>Master protocols</b>     |          |                          |
| One General Master License  | NO       | <input type="checkbox"/> |
| Two General Master Licenses | NO       | <input type="checkbox"/> |
| PROFIBUS Master             | YES      | <input type="checkbox"/> |
| CANopen Master              | YES      | <input type="checkbox"/> |
| DeviceNet Master            | YES      | <input type="checkbox"/> |
| AS-Interface Master         | YES      | <input type="checkbox"/> |
| PROFINET IO RT Controller   | YES      | <input type="checkbox"/> |

Request Form, please fill out

| Name              | Value ③                    |
|-------------------|----------------------------|
| License type      | User Single Device License |
| Manufacturer*     | 0x0001                     |
| Article number*   | 1251100                    |
| Serial number*    | 20007                      |
| Chiptype*         | 0x00000001                 |
| Step*             | 0x00000000                 |
| Romcode revision* | 0x00000000                 |

Fields marked with \* are mandatory.

④

E-mail... ⑤

Print Fax Form... ⑥

Telephone... ⑦

Export License Request... ⑧

⑨

⑩

⑪

⑫ Download License

Close Help

Figure 38: License Pane



**Note:** To display further entries under **License Type**, move the scroll box ① downwards or upwards. To display further entries under **Request Form, please fill out**, move the scroll box ② downwards or upwards.

<sup>1</sup> The title bar contains the notation of the **device description**:  
Symbolic Name [Device Description] <Station Address> (#Network ID).

### 5.3.3 Which Licenses are present in the Device?

Check, which licenses are present in the device.

How to proceed:

- Open the **License** pane as described under section *Open License Dialog* on page 74.

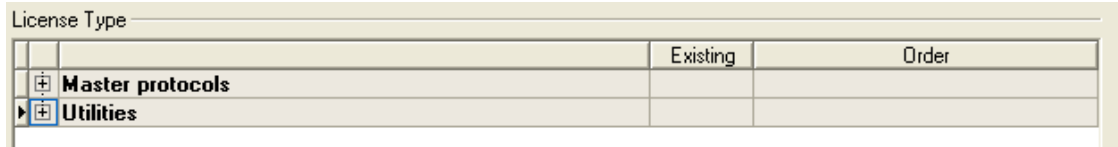


Figure 39: License Pane - License Type

- Under **License Type** click **+** at **Master protocols**.
- The **Master protocols** overview opens:

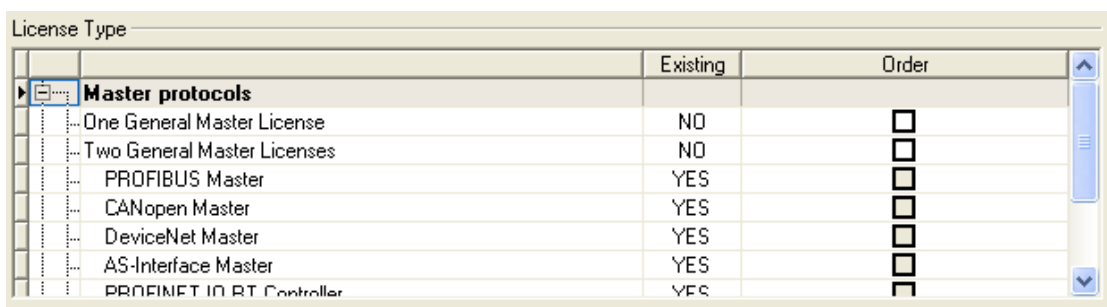


Figure 40: License Pane – License Type / Master protocols

- Or click **+** at **Utilities**.
- The **Utilities** overview opens:

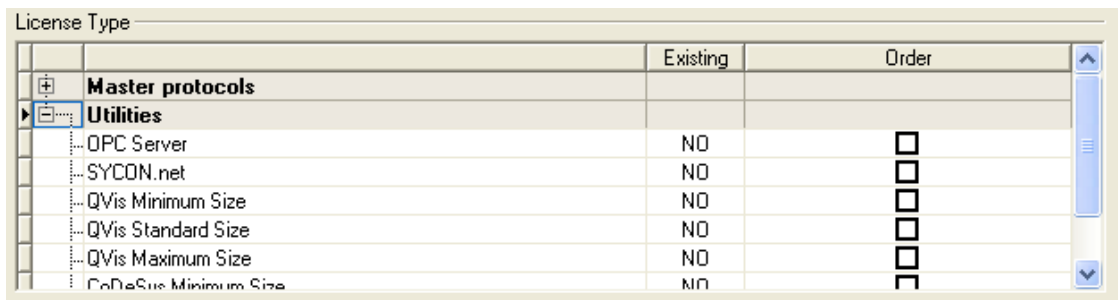


Figure 41: License Pane – License Type / Utilities

- The column **Existing** indicates which licenses are present in the device.  
**Yes** = License is present in the device.  
**No** = License is not present in the device.



**Note:** In newer versions of the present configuration software under **License Type** may be displayed additional licenses or other protocols that can be ordered later.

### 5.3.3.1 License for Master Protocols

#### *One General Master License:*

On the device maximally 1 communication protocol with master function can be implemented.

#### *Two General Master Licenses:*

On the device maximally 2 communication protocols with master function can be implemented.

The license includes the following Master protocols:

- AS-Interface Master
- CANopen Master
- DeviceNet Master
- EtherCat Master
- EtherNet/IP Scanner
- PROFIBUS Master
- PROFINET IO RT Controller
- sercos Master

### 5.3.3.2 License for Utilities

- SYCON.net
- OPC Server
- QVis Minimum Size
- QVis Standard Size
- QVis Maximum Size
- CoDeSys Minimum Size
- CoDeSys Standard Size
- CoDeSys Maximum Size

For the utilities QVis and CoDeSys, only one license each may be chosen alternatively as:

- *Minimum Size,*
- *Standard Size or*
- *Maximum Size.*

### 5.3.4 How to order a License

To order a license, proceed as follows:

|                                  | <i>Refer to Section:</i>    | <i>Page</i> |
|----------------------------------|-----------------------------|-------------|
| 1. Open the license dialog.      | <i>Open License Dialog</i>  | 74          |
| 2. Select the required licenses. | <i>Selecting License</i>    | 78          |
| 3. Enter the ordering data.      | <i>Ordering Data</i>        | 79          |
| 4. Place your order.             | <i>Ordering the License</i> | 81          |

### 5.3.5 Selecting License(s)

You can select licenses for Master protocols and / or utilities.

1. Selecting license(s) for Master protocol(s):

- Under **License Type** click  at **Master protocols** in the **License** pane.
- Under **Order** check as many licenses must run simultaneously on your device:  
*One General Master License* or  
*Two General Master Licenses.*

2. And/or select license(s) for utility(utilities):

- In the **License** pane under **License Type** click  at **Utilities**.
- Under **Order** check the required utility(utilities) *(single or several)*<sup>2</sup>:
  - SYCON.net
  - OPC Server
  - QVis Minimum Size\*
  - QVis Standard Size\*
  - QVis Maximum Size\*
  - CoDeSys Minimum Size\*\*
  - CoDeSys Standard Size\*\*
  - CoDeSys Maximum Size\*\*

2 For \*) and \*\*) minimum size, standard size or maximum size can be selected only as an alternative.

## 5.3.6 Ordering Data

### 1. Device Information

- The *Device Information* required for the order are read from the device and automatically filled in the order.

### 2. Ordering Data

Enter the *Ordering Data* into the **License** pane.

- Enter the **Data to manage the Order** (therefore refer to section *Data to manage the Order (License Information)* on page 80).

### 5.3.6.1 Device Information (Ordering data read from the Device)

The following ordering data are read from the device and displayed in the **License** pane:

- Manufacturer
- Device number
- Serial number
- Chiptype
- Step (chip revision)
- Romcode revision
- Checksum (checksum of the device data)

- The gray fields under **Request Form, please fill out** contain the ordering data read from the device:

Request Form, please fill out

| Name              | Value      |
|-------------------|------------|
| Manufacturer*     | 0x0001     |
| Article number*   | 1251100    |
| Serial number*    | 20007      |
| Chiptype*         | 0x00000001 |
| Step*             | 0x00000000 |
| Romcode revision* | 0x00000000 |
| Checksum*         | G          |

Fields marked with "\*" are mandatory.

Figure 42: License Pane - Request Form, please fill out / Device Information

- These ordering data read out from the device are displayed automatically from the device.

### 5.3.6.2 Data to manage the Order (License Information)

For your order you must enter the following data to the **License** pane:

1. License Type (User Single Device License).

| Name         | Value                      |
|--------------|----------------------------|
| License type | User Single Device License |

Figure 43: License Pane - Request Form, please fill out / License Type

- Select the license type under **Request Form, please fill out > Value**, (for future application, currently only *User Single Device License* can be selected).
- 2. Mandatory data to the order request (editable fields):
  - First Name
  - Surname
  - E Mail (address, to which the license download link shall be send.)
  - Telephone
  - Company
  - Address
  - Country
  - City, State, Zip

| Name            | Value           |
|-----------------|-----------------|
| First name*     | John            |
| Surname*        | Doe             |
| E-Mail*         | License@doe.com |
| Telephone*      | 0011223344-55   |
| Fax             | 0011223344-100  |
| Customer number | 123456789       |
| Company*        | Doe Example LTD |

Fields marked with '\*' are mandatory.

Figure 44: License Pane - Request Form, please fill out / Mandatory data

- Enter all mandatory fields under **Request Form, please fill out > Value** (marked with\*).
- 3. Additional order data, not mandatory (editable fields):
  - Fax
  - Customer Number
  - Order Number
  - Value added tax identification number
- Under **Request Form, please fill out > Value** enter all fields for the additional data, which are not mandatory.

### 5.3.7 Ordering the License

Place your order in the **License** pane. Therefore:



Figure 45: License Pane – Selecting the Subsidiary / Ordering / Contacts

1. Select the **Subsidiary** (4), to which the order shall be send.
2. Place the order:

- |                                                       | <i>Refer to Section:</i>                                  | <i>Page</i> |
|-------------------------------------------------------|-----------------------------------------------------------|-------------|
| • by <b>E-Mail</b> (5),                               | <i>Ordering the License <u>by E Mail</u></i>              | 82          |
| • or by <b>Fax</b> (6)<br>or by <b>Telephone</b> (7), | <i>Ordering the License <u>by Fax or by Telephone</u></i> | 83          |
| • or in a <b>File</b> (8).                            | <i><u>Exporting License Request to a File</u></i>         | 85          |
- The **Contact Data** of the selected subsidiary are displayed under Position (9), (10) and (11).

### 5.3.7.1 Ordering the License by E Mail

You can place your order by e-mail.



Figure 46: License Pane – placing the order by E-mail

- Click **E-mail...** 5.
- The order E-mail **License request** opens:

**Header:**

- To...: SMTP:license@DoeExample.com <license@DoeExample.com> (a)
- Cc...:
- Subject: License request
- Append...: EmailOrderRequest\_1251100\_20007.xml (b)

**Body:**

```

=====
netX License Order
=====

Company: Doe Example LTD

Address: 2000th Rd U. S. NY 11417 (c)
Fax: +49 0011223344-100

Licensee Information (d)
-----
First Name: John
Surname: Doe
e-Mail: License@doe.com
Telephone: 0011223344-55
Fax: 0011223344-100
Customer Number: 123456789
Company: Doe Example LTD
Address: 2000th Rd
Country: U. S.
City Zip: NY 11417
Order Number: 987654321
Tax Ident. Number: test

License Type (e)
-----
User Single Device License

Device Information (f)
-----
Manufacturer: 0x0001
Device Number: 1251100
Serial Number: 20007
Chip Type: 0x00000001
Step: 0x00000000
Romcode Revision: 0x00000000
License Flags 1: 0x7f
License Flags 2: 0x0

Ordered Licenses (g)
-----
Master Protocols:

> One General Master License
> AS-Interface Master
> CANopen Master
> DeviceNet Master
> EtherCat Master
> EtherNet/IP Scanner
> PROFIBUS Master
> PROFINET IO RT Controller
> SERCOS III Master

Utilities:

> SYCON.net
  
```

Figure 47: Example: Order E-Mail License request

- The order e-mail **License request** contains:
  - the **E-mail...** of the selected subsidiary (a),
  - the automatically generated **XML file** (b) *EmailOrderRequest\_[Devicenumber]\_[Serialnumber].xml* with a summary info of the **order information**,
  - the **Order Address** (c),
  - the **License Information** (d),
  - the **License Type** (e),
  - the **Device Data** (f),
  - the **ordered Licenses** (g).
- Send the order e-mail **License request**.
- The order process is complete.

### 5.3.7.2 Ordering the License by Fax or by Telephone

You can place your order by Fax or by Telephone.



Figure 48: License Pane - placing the order by Fax or by Telephone

- Click **Print Fax Form** ⑥ or **Telephone...** ⑦.
- The summary of the ordering data *PrintOrderRequest\_[Devicenum-ber]\_[Serialnumber].html* is opened in a browser window.



**Note:** If your browser does not display the order data or the window **Move Element** or **Copy Element** are displayed, check the safety settings of your system.

### netX License Order Form

Doe Example LTD  
2000th Rd

NY 11417  
U. S.  
fax: +11223344-100

#### Licensee Information ④

|                           |                 |
|---------------------------|-----------------|
| <i>First Name:</i>        | John            |
| <i>Surname:</i>           | Doe             |
| <i>e-Mail:</i>            | License@doe.com |
| <i>Telephone:</i>         | 0011223344-55   |
| <i>Fax:</i>               | 0011223344-100  |
| <i>Customer No:</i>       | 123456789       |
| <i>Company:</i>           | Doe Example LTD |
| <i>Address:</i>           | 2000th Rd       |
| <i>Country:</i>           | U. S.           |
| <i>City Zip:</i>          | NY 11417        |
| <i>Order Number:</i>      | 987654321       |
| <i>Tax Ident. Number:</i> | test            |

#### License Type ⑤

User Single Device License

#### Device Information ⑥

|                          |            |
|--------------------------|------------|
| <i>Manufacturer:</i>     | 0x0001     |
| <i>Device Number:</i>    | 1251100    |
| <i>Serial Number:</i>    | 20007      |
| <i>Chip Type:</i>        | 0x00000001 |
| <i>Step:</i>             | 0x00000000 |
| <i>Romcode Revision:</i> | 0x00000000 |
| <i>License Flags 1:</i>  | 0x7f       |
| <i>License Flags 2:</i>  | 0x0        |

#### Ordered Licenses ⑧

*Master Protocols*

- One General Master License
- Sercos III Master

*Utilities*

- SYCON.net

Date: \_\_\_\_\_

Signature: \_\_\_\_\_

Figure 49: Example: Order Data Form *PrintOrderRequest*

- The order data form contains:
- the **Order Address** c,
- the **License Information** d,
- the **License Type** e,
- the **Device Data** f,
- the **ordered Licenses** g.
- Print the order data form, sign it and send it by Fax.



Figure 50: License Pane – Fax Number of the selected Subsidiary

- Use the Fax number 10, which is displayed after the subsidiary was selected in the **License** pane.

Or:

- Keep ready the order data form and communicate the order data via telephone.



Figure 51: License Pane – Telephone Number of the selected Subsidiary

- Use the telephone number 11, which is displayed after the subsidiary was selected in the **License** pane.
- The order process is complete.

### 5.3.7.3 Exporting License Request to a File

If you are working on a process computer without an e-mail client, you can export your order information to a file, save the file to a removable disk and place your order manually via e-mail from a different PC.



Figure 52: License Pane - Ordering by exported File and E-Mail

- Click **Export License Request...** 8.
- The window **Browse For Folder** is displayed.
- Choose for or create a new folder on a removable disk.
- Save the automatically generated **XML file** *EmailOrderRequest\_- [Devicenumber]\_[Serialnumber].xml* with a summary info of the **order information** to this folder.
- Send this file from a PC with an e-mail client manually via e-mail.
- Therefore use an e-mail address , which is displayed after the subsidiary was selected in the **License** pane (see Position 9 Figure *License Pane* on page 75).
- The order process is complete.

### 5.3.8 How to get the License and transfer it to the Device



**Note:** License files can only be delivered via e-mail. The e-mail contains a link to download the license file.

According to the license you ordered, you will receive an e-mail containing a **Link to download the License File**. This leads to a server PC on which the license file is provided. Using the received link you will have to save the license file on your PC and then transfer the license to your device. If your e-mail client is on another PC as your device, you must save your license file e. g. to an USB stick.

#### Steps how to proceed

1. Save the license file to a PC or a disk.
  - Click to the **Link to download the License File** in the e-mail.
  - Save the license file \*.nxi to a PC or a removable disk.
2. Download the license file to the device.
  - Respectively connect the removable disk with the license file to the PC, which is connected to your device.
  - Click **Download License**  in the **License** pane in the configuration software.



Figure 53: License Pane - Download License

- The File selection window **Open** is displayed.
    - Therein select the license file *netX License Files (\*.nxi)*.
    - Click **Open**.
  - The license file is transferred to the device.
  - After this the license is present in the device and is activated with the next device reset.
3. Activate Device Reset



**Hint:** To activate the license in the first device, a device reset is required.

- To check whether the license has been activated, follow the steps in section *Which Licenses are present in the Device?* on page 76.

## 5.4 Start /Stop Communication

You can manually start or stop the communication at the PROFIBUS MPI network.

- **Start Communication** is enabled, if the communication has been stopped before or if the configuration requires this (Controlled release of communication).
- **Stop Communication** is enabled, if the communication has been started.

To start or to stop the communication, proceed as follows:

### Start Communication

6. Connecting Device:



**Note:** To start the communication of the device at the bus manually, an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device is required.



Further information can be found in the *Connecting/Disconnecting Device* section on page 72.

7. Select Additional Functions > Service > Start Communication from the context menu (right mouse click).

🔗 The device communicates at the bus.

### Stop Communication

8. Select Additional Functions > Service > Stop Communication from the context menu (right mouse click).

🔗 The communication of the device at the bus is stopped.

## 6 Diagnosis

### 6.1 Overview Diagnosis

The dialog **Diagnosis** serves to diagnose the device behavior and communication errors. For diagnosis the device must reside in online state.

#### Diagnosis Panes

The table below gives an overview for the individual **Diagnosis** dialog panes descriptions:

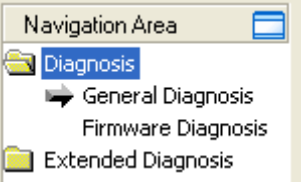
| PROFIBUS MPI DTM                                                                                                 | Folder Name / Section | Manual Page |
|------------------------------------------------------------------------------------------------------------------|-----------------------|-------------|
| <br>Navigation Area - Diagnosis | General Diagnosis     | 89          |
|                                                                                                                  | Firmware Diagnosis    | 91          |

Table 22: Descriptions of the Diagnosis Panes

#### Online Connection to the Device



**Note:** Accessing the **Diagnosis** panes of the PROFIBUS MPI DTM requires an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device. For further information refer to section *Connecting/Disconnecting Device* on page 72.

#### How to proceed

1. In the PROFIBUS MPI DTM diagnosis dialog check whether the communication is OK:

**Diagnosis > General Diagnosis > Device status "Communication"** must be green!

2. **"Communication"** is green: Open the **IO Monitor** and test the input or output data..
3. **"Communication"** is not green: Use **Diagnosis** and **Extended diagnosis** for troubleshooting.

#### Extended Diagnosis

The **Extended Diagnosis** helps to find communication and configuration errors, when default diagnosis fails. For further information refer to section *Overview Extended Diagnosis* on page 92.

## 6.2 General Diagnosis

Information regarding the Device State and other general diagnosis parameters are displayed in the **General Diagnosis** dialog.

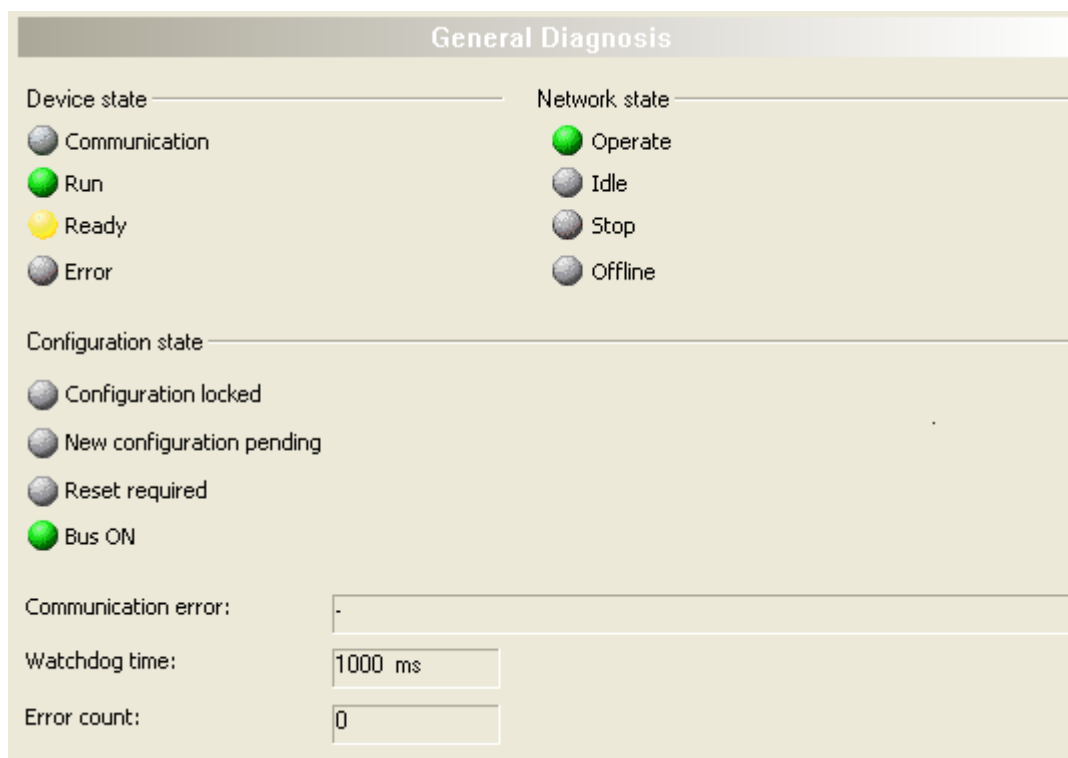


Figure 54: General Diagnosis

| LED           | Meaning                                                                                                                                                                                        | Color                                                                                         | State                      |
|---------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------|----------------------------|
| Device State  |                                                                                                                                                                                                |                                                                                               |                            |
| Communication | Shows whether the PROFIBUS MPI device executes the network communication.                                                                                                                      |  (green)  | In COMMUNICATION state     |
|               |                                                                                                                                                                                                |  (gray)   | Not in COMMUNICATION state |
| Run           | Shows whether the PROFIBUS MPI device has been configured correctly.                                                                                                                           |  (green)  | Configuration OK           |
|               |                                                                                                                                                                                                |  (gray)   | Configuration not OK       |
| Ready         | Shows whether the PROFIBUS MPI device has been started correctly. The PROFIBUS MPI device waits for a configuration.                                                                           |  (yellow) | Device READY               |
|               |                                                                                                                                                                                                |  (gray)   | Device not READY           |
| Error         | Shows whether the PROFIBUS MPI device records a device status error. For further information about the error characteristics and the number of counted errors refer to the extended diagnosis. |  (red)    | ERROR                      |
|               |                                                                                                                                                                                                |  (gray)   | No ERROR                   |
| Network State |                                                                                                                                                                                                |                                                                                               |                            |
| Operate       | Shows whether the PROFIBUS MPI device is in data exchange. There is a cyclic data exchange at the PROFIBUS MPI network.                                                                        |  (green)  | In OPERATION state         |
|               |                                                                                                                                                                                                |  (gray)   | Not in OPERATION state     |
| Idle          | Shows whether the PROFIBUS MPI device is in idle state.                                                                                                                                        |  (yellow) | In IDLE state              |
|               |                                                                                                                                                                                                |  (gray)   | Not in IDLE state          |

| LED                       | Meaning                                                                                                                                                                                                                                      | Color                                                                                       | State                        |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|------------------------------|
| Stop                      | Shows whether the PROFIBUS MPI device is in Stop state: There is no cyclic data exchange at the PROFIBUS MPI network. The PROFIBUS MPI device was stopped by the application program or it changed to the Stop state because of a bus error. |  (red)    | In STOP state                |
|                           |                                                                                                                                                                                                                                              |  (gray)   | Not in STOP state            |
| Offline                   | The PROFIBUS MPI device is offline as long as it does not have a valid configuration.                                                                                                                                                        |  (yellow) | In OFFLINE state             |
|                           |                                                                                                                                                                                                                                              |  (gray)   | Not in OFFLINE state         |
| Configuration State       |                                                                                                                                                                                                                                              |                                                                                             |                              |
| Configuration locked      | Shows whether the PROFIBUS MPI device configuration is locked, to avoid the configuration data are typed over.                                                                                                                               |  (yellow) | Configuration LOCKED         |
|                           |                                                                                                                                                                                                                                              |  (gray)   | Configuration not LOCKED     |
| New Configuration pending | Shows whether a new PROFIBUS MPI device configuration is available.                                                                                                                                                                          |  (yellow) | New Configuration pending    |
|                           |                                                                                                                                                                                                                                              |  (gray)   | No new Configuration pending |
| Reset required            | Shows whether a firmware reset is required as a new PROFIBUS MPI device configuration has been loaded into the device.                                                                                                                       |  (yellow) | RESET required               |
|                           |                                                                                                                                                                                                                                              |  (gray)   | No RESET required            |
| Bus ON                    | Shows whether the bus communication was started or stopped. I. e., whether the device is active on the bus or no bus communication to the device is possible and no response telegrams are sent.                                             |  (green)  | Bus ON                       |
|                           |                                                                                                                                                                                                                                              |  (gray)  | Bus OFF                      |

Table 23: Indication General Diagnosis

| Parameter           | Meaning                                                                                                                                                                                                                      |
|---------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Communication Error | Shows the name of the communication error. If the cause of error is resolved, the value will be set to zero again.                                                                                                           |
| Watchdog time       | Shows the watchdog time in ms.                                                                                                                                                                                               |
| Error Count         | This field holds the total number of errors detected since power-up, respectively after reset. The protocol stack counts all sorts of errors in this field no matter whether they were network related or caused internally. |

Table 24: Parameter General Diagnosis

## 6.3 Firmware Diagnosis

In the dialog **Firmware Diagnosis** the actual task information of the firmware is displayed.

Under **Firmware** or **Version** the name of the firmware and version (including the date) are indicated.

| Firmware Diagnosis |                 |         |          |                                 |                              |
|--------------------|-----------------|---------|----------|---------------------------------|------------------------------|
| Firmware:          | PROFIBUS MPI    |         |          |                                 |                              |
| Version:           | 2.4.0 (Build 1) |         |          |                                 |                              |
| Date:              | 23.2.2011       |         |          |                                 |                              |
| Task information:  |                 |         |          |                                 |                              |
| Task               | Name of task    | Version | Priority | Description                     | State                        |
| 0                  | RX_IDLE         | 1.0     | 63       | RX IDLE Task.                   | Task Status ok. (0x00000000) |
| 1                  | RX_TIMER        | 1.0     | 1        | rcX Timer.                      | Task Status ok. (0x00000000) |
| 2                  | RX_SYSTEM       | 1.16    | 8        | Middleware System Task.         | Task Status ok. (0x00000000) |
| 3                  | DPM_COM0_SMBX   | 1.0     | 50       | TLR-Router DPM.                 | Task Status ok. (0x00000000) |
| 4                  | DPM_COM0_RMBX   | 1.0     | 51       | TLR-Router DPM.                 | Task Status ok. (0x00000000) |
| 5                  | TLR_TIMER       | 0.0     | 39       | The task identifier is unknown. | Task Status ok. (0x00000000) |
| 6                  | MARSHALLER      | 2.0     | 56       | Marshaller: Main Task.          | Task Status ok. (0x00000000) |
| 7                  | PROFIBUS_DL     | 4.0     | 21       | PROFIBUS Data Link Layer Ta...  | Task Status ok. (0x00000000) |
| 8                  | PROFIBUS_MPI    | 2.1     | 27       | PROFIBUS MPI Task.              | Task Status ok. (0x00000000) |
| 9                  | PROFIBUS_MPI_AP | 2.1     | 38       | PROFIBUS MPI Application Task.  | Task Status ok. (0x00000000) |
| 10                 | PACKET_ROUTER   | 2.0     | 57       | Marshaller: Packet Router Task. | Task Status ok. (0x00000000) |

Figure 55: Firmware Diagnosis

### Task Information:

The table **Task Information** is listing the task information of the single firmware tasks.

| Column       | Meaning                    |
|--------------|----------------------------|
| Task         | Task number                |
| Name of task | Name of the task           |
| Version      | Version number of the task |
| Prio         | Priority of the task       |
| Description  | Description of the task    |
| Status       | Current status of the task |

Table 25: Description Table Task Information

## 7 Extended Diagnosis

### 7.1 Overview Extended Diagnosis

The **Extended Diagnosis** of the PROFIBUS MPI DTM helps to find communication and configuration errors. Therefore it contains a list of diagnosis structures as online counter, states and parameters.

#### Dialog Panes “Extended Diagnosis”

The table below gives an overview for the **Extended Diagnosis** dialog panes descriptions:

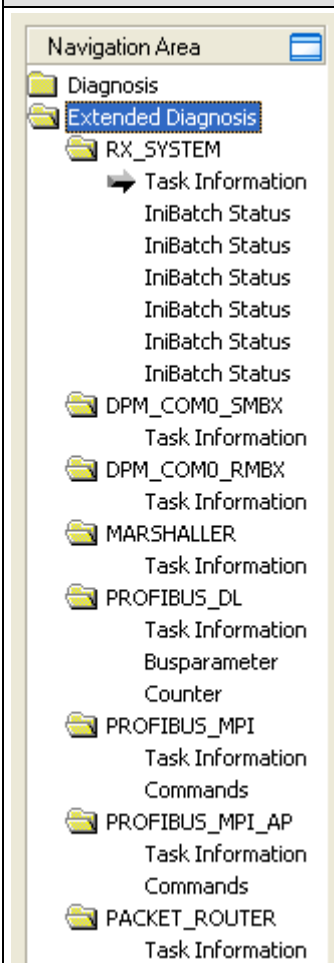
| PROFIBUS MPI DTM                                                                   | Folder Name            | Dialog Pane                      | Manual Page |
|------------------------------------------------------------------------------------|------------------------|----------------------------------|-------------|
|  | <i>RX-SYSTEM</i>       | <i>Task Information</i>          | 93          |
|                                                                                    |                        | <i>IniBatch Status</i>           | 94          |
|                                                                                    | <i>DPM_COMO_SMBX</i>   | <i>Task Information</i>          | 93          |
|                                                                                    | <i>DPM_COMO_RMBX</i>   | <i>Task Information</i>          | 93          |
|                                                                                    | <i>MARSHALLER</i>      | <i>Task Information</i>          | 93          |
|                                                                                    | <i>PROFIBUS_DL</i>     | <i>Task Information</i>          | 93          |
|                                                                                    |                        | <i>PROFIBUS_DL/Busparameters</i> | 95          |
|                                                                                    |                        | <i>PROFIBUS_DL/Counter</i>       | 96          |
|                                                                                    | <i>PROFIBUS_MPI</i>    | <i>PROFIBUS_MPI/Commands</i>     | 97          |
|                                                                                    |                        | <i>Task Information</i>          | 93          |
|                                                                                    | <i>PROFIBUS_MPI_AP</i> | <i>PROFIBUS_MPI_AP/Commands</i>  | 98          |
|                                                                                    |                        | <i>Task Information</i>          | 93          |
|                                                                                    | <i>PACKET_ROUTER</i>   | <i>Task Information</i>          | 93          |

Table 26: Descriptions of the Dialog Panes Extended Diagnosis PROFIBUS MPI

#### Online Connection to the Device



**Note:** Accessing the **Extended Diagnosis** dialog panes of the PROFIBUS MPI DTM requires an online connection from the PROFIBUS MPI DTM to the PROFIBUS MPI device. For further information refer to section *Connecting/Disconnecting Device* on page 72.

## 7.2 Task Information

| Task Information    |                                                                  |
|---------------------|------------------------------------------------------------------|
| Task states         |                                                                  |
| Name                | Value                                                            |
| Identifier          |                                                                  |
| Major version       | <i>[The displayed values depend from the corresponding task]</i> |
| Minor version       |                                                                  |
| Maximum Packet size |                                                                  |
| Default Que         |                                                                  |
| Unique identifier   |                                                                  |
| Init result         |                                                                  |

Figure 56: Extended Diagnosis > [Folder Name] > Task Information Example Display

| Name                | Description                                                                                                                                               |
|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| Identifier          | Identification number of the task                                                                                                                         |
| Major version       | Task version, contains incompatible changes                                                                                                               |
| Minor version       | Task version, contains compatible changes                                                                                                                 |
| Maximum packet size | Maximum packet size, which the task sends                                                                                                                 |
| Default Queue       | Queue handle, which is accessible via DPM by mailbox.                                                                                                     |
| UUID                | Unique user ID, 16 Byte indicator used for task identification and its affiliation e. g. to a stack (therein different identification data are coded in). |
| Init result         | Error Code, 0= no Error<br><br>The description of the error codes can be found in this manual or in the corresponding software reference manuals.         |

Table 27: Extended Diagnosis > [Folder Name] > Task Information

## 7.3 IniBatch Status

| IniBatch-Status         |             |
|-------------------------|-------------|
| Task states             |             |
| Name                    | Value       |
| Communication Channel   | 0           |
| Current State           | Error       |
| IniBatch Result         | No DBM file |
| OpenDbm Result          | 24975       |
| SendPacket Result       | 0           |
| Confirmation Result     | 0           |
| Last Packet Number      | 0           |
| Last Packet Command     | 0           |
| Last Packet Length      | 0           |
| Last Packet Destination | 0           |

Figure 57: Extended Diagnosis > [Folder Name] > IniBatch Status Example Display

| Name                    | Description                                                                                                                                                                                                                                                                                                 |
|-------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Communication Channel   | Number of the communication channel used by the device.                                                                                                                                                                                                                                                     |
| Current State           | Idle;<br>IniBatch packets in progress;<br>Retrying to send last packet;<br>Error                                                                                                                                                                                                                            |
| IniBatch Result         | Ok;<br>No DBM file;<br>No Packet table;<br>No data set available;<br>Data set is shorter than packet length;<br>Packet Buffer is shorter than Packet length;<br>Invalid packet destination;<br>Logical queue not defined<br>Send packet failed;<br>Too many retries;<br>Error in confirmation packet status |
| OpenDbm Result          | Error when opening the IniBatch data base<br>Under "OpenDbm Result" the error code is typed in, when "IniBatch Result" == "No DBM file" (1) is.                                                                                                                                                             |
| SendPacket Result       | Error when sending a packet<br>Under "SendPacket Result" the error code is typed in, when "IniBatch Result" == "send packet failed" (8) is.                                                                                                                                                                 |
| Confirmation Result     | Confirmation error when sending packets<br>Under "Confirmation Result" the packet specific error code from the ulSta is typed in, when "IniBatch Result" == "Error in confirmation packet status" (10) is.                                                                                                  |
| Last Packet Number      | Value depends by the communication system.                                                                                                                                                                                                                                                                  |
| Last Packet Command     | Value depends by the communication system.                                                                                                                                                                                                                                                                  |
| Last Packet Length      | Value depends by the communication system.                                                                                                                                                                                                                                                                  |
| Last Packet Destination | Value depends by the communication system.                                                                                                                                                                                                                                                                  |

Table 28: Extended Diagnosis > [Folder Name] > IniBatch Status

The task status "Confirmation Result" is bus specific. The other task statuses are rcx-related error codes.

## 7.4 PROFIBUS\_DL/Busparameters

Under **Extended Diagnosis > PROFIBUS\_DL> Busparameter** the values of the configured bus parameters active on the bus are displayed.

| Busparameter                   |           |
|--------------------------------|-----------|
| Task states                    |           |
| Name                           | Value     |
| Station Address                | 1         |
| Baudrate                       | 187 Kbaud |
| Slot Time (tBit)               | 415       |
| Min. Station Delay Time (tBit) | 60        |
| Max. Station Delay Time (tBit) | 400       |
| Quiet Time (tBit)              | 1         |
| Setup Time (tBit)              | 1         |
| Target Rotation Time (tBit)    | 10000     |
| GAP Factor                     | 20        |
| Highest Station Address (HSA)  | 31        |
| Max. Retry Limit:              | 1         |

Figure 58: Extended Diagnosis > PROFIBUS\_DL> Busparameter

| Parameter                      | Meaning                                                                                          | Range of Value/ Value                                                                                                                                                                                          |
|--------------------------------|--------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Station Address                | PROFIBUS MPI Address of the device.                                                              | 0 ... 126,<br>Default: 1                                                                                                                                                                                       |
| Baudrate                       | PROFIBUS MPI Baud Rate<br>Indicates the velocity of transmission: Number of bits per second.     | 9,6 kBit/s,<br>19,2 kBit/s,<br>31,25 kBit/s,<br>45,45 kBit/s,<br>93,75 kBit/s,<br>187,5 kBit/s,<br>500 kBit/s,<br>1,5 MBit/s,<br>3 MBit/s,<br>6 MBit/s,<br>12 MBit/s,<br>Auto-Detect,<br>Default: 187,5 kBit/s |
| Slot Time (tBit)               | Slot Time ( $T_{SL}$ )                                                                           | 37 ... 16383 tBit,<br>Default: 415 tBit                                                                                                                                                                        |
| Min. Station Delay Time (tBit) | Minimum Station Delay of Responders (min $T_{SDR}$ )                                             | 1 ... 1023 tBit,<br>Default: 60 tBit                                                                                                                                                                           |
| Max. Station Delay Time (tBit) | Maximum Station Delay of Responders (max $T_{SDR}$ )                                             | 1 ... 1023 tBit,<br>Default: 400 tBit                                                                                                                                                                          |
| Quiet Time (tBit)              | Quiet Time ( $T_{QUI}$ )                                                                         | 0 ... 127 tBit,<br>Default: 1 tBit                                                                                                                                                                             |
| Setup Time (tBit)              | Setup Time ( $T_{SET}$ )                                                                         | 1 ... 255 tBit,<br>Default: 1 tBit                                                                                                                                                                             |
| Target Rotation Time (tBit)    | Target Rotation Time ( $T_{TR}$ )                                                                | $\geq 255$ tBit,<br>Default: 10000 tBit                                                                                                                                                                        |
| GAP Factor                     | GAP Actualization Factor (G)                                                                     | 1 ... 255,<br>Default: 20                                                                                                                                                                                      |
| Highest Station Address (HAS)  | Highest Station Address ( $H_{SA}$ ),<br>Station address of the highest active (Master) station. | 1 ... 126,<br>Default: 31                                                                                                                                                                                      |
| Max. Retry Limit               | Max number of telegram retries (Max_Retry_Limit)                                                 | 1 ... 8,<br>Default: 1                                                                                                                                                                                         |

Table 29: Extended Diagnosis > PROFIBUS\_DL> Busparameters

## 7.5 PROFIBUS\_DL/Counter

| Counter                 |       |
|-------------------------|-------|
| Task states             |       |
| Name                    | Value |
| Receive Frames          | 0     |
| Transmit Frames         | 0     |
| Transmit Error          | 0     |
| Receive Error           | 0     |
| Target Rotation Timeout | 0     |

Figure 59: Extended Diagnosis > PROFIBUS\_DL> Counter

The values of the counter **Receive Frames** and **Transmit Frames** show generally whether there is bus activity or not.

| Name                    | Description                                |
|-------------------------|--------------------------------------------|
| Receive Frames          | Counter for number received frames         |
| Transmit Frames         | Counter for number transmitted frames      |
| Transmit Error          | Counter for number transmitted errors      |
| Receive Error           | Counter for number received errors         |
| Target Rotation Timeout | Counter for number target rotation timeout |

Table 30: Extended Diagnosis > PROFIBUS\_DL> Counter

## 7.6 PROFIBUS\_MPI/Commands

| Commands                           |       |
|------------------------------------|-------|
| Task states                        |       |
| Name                               | Value |
| Cyclic ind.                        | 4711  |
| Unknown req./cnf.                  | 0     |
| Get packet failed                  | 0     |
| Send packet failed                 | 0     |
| Command pck. routed to Profibus DL | 0     |
| Initialization req.                | 1     |
| Initialization cnf.                | 1     |
| Transparent req.                   | 0     |
| Transparent cnf.                   | 0     |
| Read/Write Data Block req.         | 0     |
| Read/Write Data Block cnf.         | 0     |
| Read Operation state req.          | 0     |
| Read Operation state cnf.          | 0     |
| Read/Write Memory Block req.       | 0     |
| Read/Write Memory Block cnf.       | 0     |
| Read/Write I/O Area req.           | 0     |
| Read/Write I/O Area cnf.           | 0     |
| Read/Write Counter Area req.       | 0     |
| Read/Write Counter Area cnf.       | 0     |
| Read/Write Timer Area req.         | 0     |
| Read/Write Timer Area cnf.         | 0     |
| Disconnect Device req.             | 0     |
| Disconnect Device cnf.             | 0     |
| Disconnect All Device req.         | 0     |
| Disconnect All Device cnf.         | 0     |
| Set Bus Parameter req.             | 1     |
| Set Bus Parameter cnf.             | 0     |
| Close Socket req.                  | 0     |
| Close Socket cnf.                  | 0     |
| Multiple Read req.                 | 0     |
| Multiple Read cnf.                 | 0     |
| Multiple Write req.                | 0     |
| Multiple Write cnf.                | 0     |
| Get Info req.                      | 4711  |
| Get Info cnf.                      | 4711  |

Figure 60: Extended Diagnosis > PROFIBUS\_MPI > Commands (Example)

| Name      | Description                                                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| [Service] | Diagnosis counter: Indicates the services processed. (The services of the single packets are described in the PROFIBUS MPI Protocol API manual [4].) |

Table 31: Extended Diagnosis > PROFIBUS\_MPI > Commands

7.7 PROFIBUS\_MPI\_AP/Commands

| Commands                            |       |
|-------------------------------------|-------|
| Task states                         |       |
| Name                                | Value |
| Cyclic ind.                         | 5799  |
| Unknown req./cnf.                   | 0     |
| Get packet failed                   | 0     |
| Send packet failed                  | 0     |
| Command pck. routed to Profibus ... | 0     |
| Command pck. routed to Profibus DL  | 0     |
| Set config req.                     | 1     |
| Set config cnf.                     | 1     |
| Set config req.                     | 0     |
| Set config cnf.                     | 0     |

Figure 61: Extended Diagnosis > PROFIBUS\_MPI\_AP > Commands (Example)

| Name      | Description                                                                                                                                          |
|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------|
| [Service] | Diagnosis counter: Indicates the services processed. (The services of the single packets are described in the PROFIBUS MPI Protocol API manual [4].) |

Table 32: Extended Diagnosis > PROFIBUS\_MPI\_AP > Commands

## 8 Error Codes

### 8.1 Error Code Definition

For COM based application, like the ODM Server and ODM drivers, a common error definition is used, similar to the Microsoft Windows® HRESULT definition.

Error Code Structure:

COM Errors are HRESULTs, which are 32 bit values using the following layout:

```

3 3 2 2 2 2 2 2 2 2 2 2 1 1 1 1 1 1 1 1 1 1
1 0 9 8 7 6 5 4 3 2 1 0 9 8 7 6 5 4 3 2 1 0
+---+---+---+---+---+---+---+---+---+---+---+
|Sev|C|R|      Facility          |          Code          |
+---+---+---+---+---+---+---+---+---+---+---+

```

where

*Sev* - is the severity code:

00 - Success

01 - Informational

10 - Warning

11 - Error

*C* - is the Customer code flag

*R* - is a reserved bit

*Facility* - is the facility code

*Code* - is the facility's status code

In this common error definition, several error code regions are already reserved by Windows® itself, the ODM and some other modules.

## 8.2 Overview Error Codes

| Overview Error Codes                            | Range                                                                  |
|-------------------------------------------------|------------------------------------------------------------------------|
| General Hardware Errors<br>RCX Operating System | <i>RCX General Task:</i> 0xC02B0001 to 0xC02B4D52                      |
|                                                 | <i>RCX Common Status &amp; Errors Codes:</i> 0x00000000 to 0xC002000C  |
|                                                 | <i>RCX Status &amp; Error Codes:</i> 0x00000000 to 0xC0000008          |
| ODM Server                                      | <i>General ODM Error Codes:</i> 0x8004C700 to 0x8004C761               |
|                                                 | <i>General ODM Driver Error Codes:</i> 0x8004C7A0 to 0x8004C7C2        |
| ODM Drivers                                     | <i>cifX Driver Specific ODM Error:</i> 0x8004C001 to 0x8004C0A4        |
| cifX Device Driver<br>and netX Driver           | <i>Generic Error:</i> 0x800A0001 to 0x800A0017                         |
|                                                 | <i>Generic Driver Error:</i> 0x800B0001 to 0x800B0042                  |
|                                                 | <i>Generic Device Error:</i> 0x800C0010 to 0x800C0041                  |
| netX Driver                                     | <i>CIFX API Transport:</i> 0x800D0001 to 0x800D0013                    |
|                                                 | <i>CIFX API Transport Header State Error:</i> 0x800E0001 to 0x800E000B |
| DBM                                             | <i>ODM Error Codes:</i> 0xC004C810 to 0xC004C878                       |

Table 33: Overview Error Codes and Ranges



The fieldbus specific error codes are described in the manuals of the corresponding protocol tasks.

## 8.3 General Hardware Error Codes

### 8.3.1 RCX General Task Errors

| Error Code (Definition)      | Value      | Description                          |
|------------------------------|------------|--------------------------------------|
| RCX_E_QUE_UNKNOWN            | 0xC02B0001 | Unknown Queue                        |
| RCX_E_QUE_INDEX_UNKNOWN      | 0xC02B0002 | Unknown Queue Index                  |
| RCX_E_TASK_UNKNOWN           | 0xC02B0003 | Unknown Task                         |
| RCX_E_TASK_INDEX_UNKNOWN     | 0xC02B0004 | Unknown Task Index                   |
| RCX_E_TASK_HANDLE_INVALID    | 0xC02B0005 | Invalid Task Handle                  |
| RCX_E_TASK_INFO_IDX_UNKNOWN  | 0xC02B0006 | Unknown Index                        |
| RCX_E_FILE_XFR_TYPE_INVALID  | 0xC02B0007 | Invalid Transfer Type                |
| RCX_E_FILE_REQUEST_INCORRECT | 0xC02B0008 | Invalid File Request                 |
| RCX_E_TASK_INVALID           | 0xC02B000E | Invalid Task                         |
| RCX_E_SEC_FAILED             | 0xC02B001D | Security EEPROM Access Failed        |
| RCX_E_EEPROM_DISABLED        | 0xC02B001E | EEPROM Disabled                      |
| RCX_E_INVALID_EXT            | 0xC02B001F | Invalid Extension                    |
| RCX_E_SIZE_OUT_OF_RANGE      | 0xC02B0020 | Block Size Out Of Range              |
| RCX_E_INVALID_CHANNEL        | 0xC02B0021 | Invalid Channel                      |
| RCX_E_INVALID_FILE_LEN       | 0xC02B0022 | Invalid File Length                  |
| RCX_E_INVALID_CHAR_FOUND     | 0xC02B0023 | Invalid Character Found              |
| RCX_E_PACKET_OUT_OF_SEQ      | 0xC02B0024 | Packet Out Of Sequence               |
| RCX_E_SEC_NOT_ALLOWED        | 0xC02B0025 | Not Allowed In Current State         |
| RCX_E_SEC_INVALID_ZONE       | 0xC02B0026 | Security EEPROM Invalid Zone         |
| RCX_E_SEC_EEPROM_NOT_AVAIL   | 0xC02B0028 | Security EEPROM Eeprom Not Available |
| RCX_E_SEC_INVALID_CHECKSUM   | 0xC02B0029 | Security EEPROM Invalid Checksum     |
| RCX_E_SEC_ZONE_NOT_WRITEABLE | 0xC02B002A | Security EEPROM Zone Not Writeable   |
| RCX_E_SEC_READ_FAILED        | 0xC02B002B | Security EEPROM Read Failed          |
| RCX_E_SEC_WRITE_FAILED       | 0xC02B002C | Security EEPROM Write Failed         |
| RCX_E_SEC_ACCESS_DENIED      | 0xC02B002D | Security EEPROM Access Denied        |
| RCX_E_SEC_EEPROM_EMULATED    | 0xC02B002E | Security EEPROM Emulated             |
| RCX_E_INVALID_BLOCK          | 0xC02B0038 | Invalid Block                        |
| RCX_E_INVALID_STRUCT_NUMBER  | 0xC02B0039 | Invalid Structure Number             |
| RCX_E_INVALID_CHECKSUM       | 0xC02B4352 | Invalid Checksum                     |
| RCX_E_CONFIG_LOCKED          | 0xC02B4B54 | Configuration Locked                 |
| RCX_E_SEC_ZONE_NOT_READABLE  | 0xC02B4D52 | Security EEPROM Zone Not Readable    |

Table 34: RCX General Task Errors

### 8.3.2 RCX Common Status & Errors Codes

| Error Code (Definition)       | Value      | Description             |
|-------------------------------|------------|-------------------------|
| RCX_S_OK                      | 0x00000000 | Success, Status Okay    |
| RCX_E_FAIL                    | 0xC0000001 | Fail                    |
| RCX_E_UNEXPECTED              | 0xC0000002 | Unexpected              |
| RCX_E_OUTOFMEMORY             | 0xC0000003 | Out Of Memory           |
| RCX_E_UNKNOWN_COMMAND         | 0xC0000004 | Unknown Command         |
| RCX_E_UNKNOWN_DESTINATION     | 0xC0000005 | Unknown Destination     |
| RCX_E_UNKNOWN_DESTINATION_ID  | 0xC0000006 | Unknown Destination ID  |
| RCX_E_INVALID_PACKET_LEN      | 0xC0000007 | Invalid Packet Length   |
| RCX_E_INVALID_EXTENSION       | 0xC0000008 | Invalid Extension       |
| RCX_E_INVALID_PARAMETER       | 0xC0000009 | Invalid Parameter       |
| RCX_E_WATCHDOG_TIMEOUT        | 0xC000000C | Watchdog Timeout        |
| RCX_E_INVALID_LIST_TYPE       | 0xC000000D | Invalid List Type       |
| RCX_E_UNKNOWN_HANDLE          | 0xC000000E | Unknown Handle          |
| RCX_E_PACKET_OUT_OF_SEQ       | 0xC000000F | Out Of Sequence         |
| RCX_E_PACKET_OUT_OF_MEMORY    | 0xC0000010 | Out Of Memory           |
| RCX_E_QUE_PACKETDONE          | 0xC0000011 | Queue Packet Done       |
| RCX_E_QUE_SENDPACKET          | 0xC0000012 | Queue Send Packet       |
| RCX_E_POOL_PACKET_GET         | 0xC0000013 | Pool Packet Get         |
| RCX_E_POOL_GET_LOAD           | 0xC0000015 | Pool Get Load           |
| RCX_E_REQUEST_RUNNING         | 0xC000001A | Request Already Running |
| RCX_E_INIT_FAULT              | 0xC0000100 | Initialization Fault    |
| RCX_E_DATABASE_ACCESS_FAILED  | 0xC0000101 | Database Access Failed  |
| RCX_E_NOT_CONFIGURED          | 0xC0000119 | Not Configured          |
| RCX_E_CONFIGURATION_FAULT     | 0xC0000120 | Configuration Fault     |
| RCX_E_INCONSISTENT_DATA_SET   | 0xC0000121 | Inconsistent Data Set   |
| RCX_E_DATA_SET_MISMATCH       | 0xC0000122 | Data Set Mismatch       |
| RCX_E_INSUFFICIENT_LICENSE    | 0xC0000123 | Insufficient License    |
| RCX_E_PARAMETER_ERROR         | 0xC0000124 | Parameter Error         |
| RCX_E_INVALID_NETWORK_ADDRESS | 0xC0000125 | Invalid Network Address |
| RCX_E_NO_SECURITY_MEMORY      | 0xC0000126 | No Security Memory      |
| RCX_E_NETWORK_FAULT           | 0xC0000140 | Network Fault           |
| RCX_E_CONNECTION_CLOSED       | 0xC0000141 | Connection Closed       |
| RCX_E_CONNECTION_TIMEOUT      | 0xC0000142 | Connection Timeout      |
| RCX_E_LONELY_NETWORK          | 0xC0000143 | Lonely Network          |
| RCX_E_DUPLICATE_NODE          | 0xC0000144 | Duplicate Node          |
| RCX_E_CABLE_DISCONNECT        | 0xC0000145 | Cable Disconnected      |
| RCX_E_BUS_OFF                 | 0xC0000180 | Network Node Bus Off    |
| RCX_E_CONFIG_LOCKED           | 0xC0000181 | Configuration Locked    |
| RCX_E_APPLICATION_NOT_READY   | 0xC0000182 | Application Not Ready   |
| RCX_E_TIMER_APPL_PACKET_SENT  | 0xC002000C | Timer App Packet Sent   |

Table 35: RCX Common Status & Errors Codes

### 8.3.3 RCX Status & Error Codes

| Error Code (Definition)      | Value      | Description            |
|------------------------------|------------|------------------------|
| RCX_S_OK                     | 0x00000000 | SUCCESS, STATUS OKAY   |
| RCX_S_QUE_UNKNOWN            | 0xC02B0001 | UNKNOWN QUEUE          |
| RCX_S_QUE_INDEX_UNKNOWN      | 0xC02B0002 | UNKNOWN QUEUE INDEX    |
| RCX_S_TASK_UNKNOWN           | 0xC02B0003 | UNKNOWN TASK           |
| RCX_S_TASK_INDEX_UNKNOWN     | 0xC02B0004 | UNKNOWN TASK INDEX     |
| RCX_S_TASK_HANDLE_INVALID    | 0xC02B0005 | INVALID TASK HANDLE    |
| RCX_S_TASK_INFO_IDX_UNKNOWN  | 0xC02B0006 | UNKNOWN INDEX          |
| RCX_S_FILE_XFR_TYPE_INVALID  | 0xC02B0007 | INVALID TRANSFER TYPE  |
| RCX_S_FILE_REQUEST_INCORRECT | 0xC02B0008 | INVALID FILE REQUEST   |
| RCX_S_UNKNOWN_DESTINATION    | 0xC0000005 | UNKNOWN DESTINATION    |
| RCX_S_UNKNOWN_DESTINATION_ID | 0xC0000006 | UNKNOWN DESTINATION ID |
| RCX_S_INVALID_LENGTH         | 0xC0000007 | INVALID LENGTH         |
| RCX_S_UNKNOWN_COMMAND        | 0xC0000004 | UNKNOWN COMMAND        |
| RCX_S_INVALID_EXTENSION      | 0xC0000008 | INVALID EXTENSION      |

Table 36: RCX Status & Error Codes

#### 8.3.3.1 RCX Status & Error Codes Slave State

| Error Code (Definition)   | Value      | Description                 |
|---------------------------|------------|-----------------------------|
| RCX_SLAVE_STATE_UNDEFINED | 0x00000000 | UNDEFINED                   |
| RCX_SLAVE_STATE_OK        | 0x00000001 | OK                          |
| RCX_SLAVE_STATE_FAILED    | 0x00000002 | FAILED (at least one slave) |

Table 37: RCX Status & Error Codes Slave State

## 8.4 ODM Error Codes

### 8.4.1 General ODM Error Codes

| Error Code (Definition)                 | Value      | Description                                                   |
|-----------------------------------------|------------|---------------------------------------------------------------|
| CODM3_E_INTERNALERROR                   | 0x8004C700 | Internal ODM Error                                            |
| ODM3_E_DESCRIPTION_NOTFOUND             | 0x8004C701 | Description not found in ODM database                         |
| CODM3_E_WRITEREGISTRY                   | 0x8004C710 | Error writing to the registry                                 |
| CODM3_E_BAD_REGULAR_EXPRESSION          | 0x8004C711 | Invalid regular expression                                    |
| CODM3_E_COMCATEGORIE_MANAGER_FAILED     | 0x8004C712 | Component Category Manager could not be instantiated          |
| CODM3_E_COMCATEGORIE_ENUMERATION_FAILED | 0x8004C713 | Driver could not be enumerated by the Category Manager        |
| CODM3_E_CREATE_LOCAL_BUFFER             | 0x8004C714 | Error creating local buffers                                  |
| CODM3_E_UNKNOWNHANDLE                   | 0x8004C715 | Unknown handle                                                |
| CODM3_E_QUEUE_LIMIT_REACHED             | 0x8004C717 | Queue size limit for connection reached                       |
| CODM3_E_DATASIZE_ZERO                   | 0x8004C718 | Zero data length passed                                       |
| CODM3_E_INVALID_DATA                    | 0x8004C719 | Invalid data content                                          |
| CODM3_E_INVALID_MODE                    | 0x8004C71A | Invalid mode                                                  |
| CODM3_E_DATABASE_READ                   | 0x8004C71B | Error reading database                                        |
| CODM3_E_CREATE_DEVICE_THREAD            | 0x8004C750 | Error creating device thread                                  |
| CODM3_E_CREATE_DEVICE_THREAD_STOP_EVENT | 0x8004C751 | Error creating device thread stop event                       |
| CODM3_E_CLIENT_NOT_REGISTERED           | 0x8004C752 | Client is not registered at the ODM                           |
| CODM3_E_NO_MORE_CLIENTS                 | 0x8004C753 | Maximum number of clients reached                             |
| CODM3_E_MAX_CLIENT_CONNECTIONS_REACHED  | 0x8004C754 | Maximum number of client connections reached                  |
| CODM3_E_ENTRY_NOT_FOUND                 | 0x8004C755 | Driver/device not found                                       |
| CODM3_E_DRIVER_NOT_FOUND                | 0x8004C757 | The requested driver is unknown to the ODM                    |
| CODM3_E_DEVICE_ALREADY_LOCKED           | 0x8004C758 | Device is locked by another process                           |
| CODM3_E_DEVICE_UNLOCKED_FAILED          | 0x8004C759 | Device could not be unlocked, lock was set by another process |
| CODM3_E_DEVICE_LOCK_NECESSARY           | 0x8004C75A | Operation requires a device lock to be set                    |
| CODM3_E_DEVICE_SUBSCRIPTIONLIMIT        | 0x8004C75B | Maximum number of servers registered for this device reached  |
| CODM3_E_DEVICE_NOTSUBSCRIBED            | 0x8004C75C | Process is not registered as a server on this device          |
| CODM3_E_DEVICE_NO_MESSAGE               | 0x8004C75D | No message available                                          |
| CODM3_E_TRANSFERTIMEOUT                 | 0x8004C760 | Message transfer timeout                                      |
| CODM3_E_MESSAGE_INSERVICE               | 0x8004C761 | Message in service                                            |

Table 38: ODM Error Codes - General ODM Error Codes

## 8.4.2 General ODM Driver Error Codes

| Error Code (Definition)                | Value      | Description                             |
|----------------------------------------|------------|-----------------------------------------|
| CODM3_E_DRV_OPEN_DEVICE                | 0x8004C7A0 | Packet type unsupported by driver       |
| CODM3_E_DRV_INVALID_IDENTIFIER         | 0x8004C7A1 | Invalid device identifier               |
| CODM3_E_DRV_DEVICE_PARAMETERS_MISMATCH | 0x8004C7A3 | Parameters differ from requested device |
| CODM3_E_DRV_BROWSE_NO_DEVICES          | 0x8004C7A4 | No devices found                        |
| CODM3_E_DRV_CREATE_DEVICE_INST         | 0x8004C7A5 | Device instance could not be created    |
| CODM3_E_DRV_DEVICE_NOMORE_TX           | 0x8004C7A6 | Device connection limit reached         |
| CODM3_E_DRV_DEVICE_DUPLICATE_TX        | 0x8004C7A7 | Duplicate transmitter ID                |
| CODM3_E_DRV_DEVICE_NOT_CONFIGURED      | 0x8004C7A8 | Device is not configured                |
| CODM3_E_DRV_DEVICE_COMMUNICATION       | 0x8004C7A9 | Device communication error              |
| CODM3_E_DRV_DEVICE_NO_MESSAGE          | 0x8004C7AA | No message available                    |
| CODM3_E_DRV_DEVICE_NOT_READY           | 0x8004C7AB | Device not ready                        |
| CODM3_E_DRV_INVALIDCONFIGURATION       | 0x8004C7AC | Invalid driver configuration            |
| CODM3_E_DRV_DLINVALIDMODE              | 0x8004C7C0 | Invalid download mode                   |
| CODM3_E_DRV_DLINPROGRESS               | 0x8004C7C1 | Download is active                      |
| CODM3_E_DRV_ULINPROGRESS               | 0x8004C7C2 | Upload is active                        |

Table 39: ODM Error Codes - General ODM Driver Error Codes

### 8.4.3 cifX Driver Specific ODM Error Codes

| cifX Driver Specific ODM Error Codes |            |                                                      |
|--------------------------------------|------------|------------------------------------------------------|
| Error Code (Definition)              | Value      | Description                                          |
| DRV_E_BOARD_NOT_INITIALIZED          | 0x8004C001 | DRIVER Board not initialized                         |
| DRV_E_INIT_STATE_ERROR               | 0x8004C002 | DRIVER Error in internal init state                  |
| DRV_E_READ_STATE_ERROR               | 0x8004C003 | DRIVER Error in internal read state                  |
| DRV_E_CMD_ACTIVE                     | 0x8004C004 | DRIVER Command on this channel is active             |
| DRV_E_PARAMETER_UNKNOWN              | 0x8004C005 | DRIVER Unknown parameter in function                 |
| DRV_E_WRONG_DRIVER_VERSION           | 0x8004C006 | DRIVER Version is incompatible with DLL              |
| DRV_E_PCI_SET_CONFIG_MODE            | 0x8004C007 | DRIVER Error during PCI set configuration mode       |
| DRV_E_PCI_READ_DPM_LENGTH            | 0x8004C008 | DRIVER Could not read PCI dual port memory length    |
| DRV_E_PCI_SET_RUN_MODE               | 0x8004C009 | DRIVER Error during PCI set run mode                 |
| DRV_E_DEV_DPM_ACCESS_ERROR           | 0x8004C00A | DEVICE Dual port ram not accessable(board not found) |
| DRV_E_DEV_NOT_READY                  | 0x8004C00B | DEVICE Not ready (ready flag failed)                 |
| DRV_E_DEV_NOT_RUNNING                | 0x8004C00C | DEVICE Not running (running flag failed)             |
| DRV_E_DEV_WATCHDOG_FAILED            | 0x8004C00D | DEVICE Watchdog test failed                          |
| DRV_E_DEV_OS_VERSION_ERROR           | 0x8004C00E | DEVICE Signals wrong OS version                      |
| DRV_E_DEV_SYSERR                     | 0x8004C00F | DEVICE Error in dual port flags                      |
| DRV_E_DEV_MAILBOX_FULL               | 0x8004C010 | DEVICE Send mailbox is full                          |
| DRV_E_DEV_PUT_TIMEOUT                | 0x8004C011 | DEVICE PutMessage timeout                            |
| DRV_E_DEV_GET_TIMEOUT                | 0x8004C012 | DEVICE GetMessage timeout                            |
| DRV_E_DEV_GET_NO_MESSAGE             | 0x8004C013 | DEVICE No message available                          |
| DRV_E_DEV_RESET_TIMEOUT              | 0x8004C014 | DEVICE RESET command timeout                         |
| DRV_E_DEV_NO_COM_FLAG                | 0x8004C015 | DEVICE COM-flag not set. Check if Bus is running     |
| DRV_E_DEV_EXCHANGE_FAILED            | 0x8004C016 | DEVICE I/O data exchange failed                      |
| DRV_E_DEV_EXCHANGE_TIMEOUT           | 0x8004C017 | DEVICE I/O data exchange timeout                     |
| DRV_E_DEV_COM_MODE_UNKNOWN           | 0x8004C018 | DEVICE I/O data mode unknown                         |
| DRV_E_DEV_FUNCTION_FAILED            | 0x8004C019 | DEVICE Function call failed                          |
| DRV_E_DEV_DPMSIZE_MISMATCH           | 0x8004C01A | DEVICE DPM size differs from configuration           |
| DRV_E_DEV_STATE_MODE_UNKNOWN         | 0x8004C01B | DEVICE State mode unknown                            |
| DRV_E_DEV_HW_PORT_IS_USED            | 0x8004C01C | DEVICE Output port already in use                    |
| DRV_E_USR_OPEN_ERROR                 | 0x8004C01E | USER Driver not opened (device driver not loaded)    |
| DRV_E_USR_INIT_DRV_ERROR             | 0x8004C01F | USER Can't connect to device                         |
| DRV_E_USR_NOT_INITIALIZED            | 0x8004C020 | USER Board not initialized (DevInitBoard not called) |
| DRV_E_USR_COMM_ERR                   | 0x8004C021 | USER IOCTL function failed                           |
| DRV_E_USR_DEV_NUMBER_INVALID         | 0x8004C022 | USER Parameter DeviceNumber invalid                  |
| DRV_E_USR_INFO_AREA_INVALID          | 0x8004C023 | USER Parameter InfoArea unknown                      |
| DRV_E_USR_NUMBER_INVALID             | 0x8004C024 | USER Parameter Number invalid                        |
| DRV_E_USR_MODE_INVALID               | 0x8004C025 | USER Parameter Mode invalid                          |
| DRV_E_USR_MSG_BUF_NULL_PTR           | 0x8004C026 | USER NULL pointer assignment                         |
| DRV_E_USR_MSG_BUF_TOO_SHORT          | 0x8004C027 | USER Message buffer too small                        |

| cifX Driver Specific ODM Error Codes |            |                                                    |
|--------------------------------------|------------|----------------------------------------------------|
| Error Code (Definition)              | Value      | Description                                        |
| DRV_E_USR_SIZE_INVALID               | 0x8004C028 | USER Parameter Size invalid                        |
| DRV_E_USR_SIZE_ZERO                  | 0x8004C02A | USER Parameter Size with zero length               |
| DRV_E_USR_SIZE_TOO_LONG              | 0x8004C02B | USER Parameter Size too long                       |
| DRV_E_USR_DEV_PTR_NULL               | 0x8004C02C | USER Device address null pointer                   |
| DRV_E_USR_BUF_PTR_NULL               | 0x8004C02D | USER Pointer to buffer is a null pointer           |
| DRV_E_USR_SENDSIZE_TOO_LONG          | 0x8004C02E | USER Parameter SendSize too large                  |
| DRV_E_USR_RECVSIZE_TOO_LONG          | 0x8004C02F | USER Parameter ReceiveSize too large               |
| DRV_E_USR_SENDBUF_PTR_NULL           | 0x8004C030 | USER Pointer to send buffer is a null pointer      |
| DRV_E_USR_RECVBUF_PTR_NULL           | 0x8004C031 | USER Pointer to receive buffer is a null pointer   |
| DRV_E_DMA_INSUFF_MEM                 | 0x8004C032 | DMA Memory allocation error                        |
| DRV_E_DMA_TIMEOUT_CH4                | 0x8004C033 | DMA Read I/O timeout                               |
| DRV_E_DMA_TIMEOUT_CH5                | 0x8004C034 | DMA Write I/O timeout                              |
| DRV_E_DMA_TIMEOUT_CH6                | 0x8004C035 | DMA PCI transfer timeout                           |
| DRV_E_DMA_TIMEOUT_CH7                | 0x8004C036 | DMA Download timeout                               |
| DRV_E_DMA_DB_DOWN_FAIL               | 0x8004C037 | DMA Database download failed                       |
| DRV_E_DMA_FW_DOWN_FAIL               | 0x8004C038 | DMA Firmware download failed                       |
| DRV_E_CLEAR_DB_FAIL                  | 0x8004C039 | DMA Clear database on the device failed            |
| DRV_E_DEV_NO_VIRTUAL_MEM             | 0x8004C03C | DMA USER Virtual memory not available              |
| DRV_E_DEV_UNMAP_VIRTUAL_MEM          | 0x8004C03D | DMA USER Unmap virtual memory failed               |
| DRV_E_GENERAL_ERROR                  | 0x8004C046 | DRIVER General error                               |
| DRV_E_DMA_ERROR                      | 0x8004C047 | DRIVER General DMA error                           |
| DRV_E_WDG_IO_ERROR                   | 0x8004C048 | DRIVER I/O WatchDog failed                         |
| DRV_E_WDG_DEV_ERROR                  | 0x8004C049 | DRIVER Device Watchdog failed                      |
| DRV_E_USR_DRIVER_UNKNOWN             | 0x8004C050 | USER Driver unknown                                |
| DRV_E_USR_DEVICE_NAME_INVALID        | 0x8004C051 | USER Device name invalid                           |
| DRV_E_USR_DEVICE_NAME_UNKNOWN        | 0x8004C052 | USER Device name unknown                           |
| DRV_E_USR_DEVICE_FUNC_NOTIMPL        | 0x8004C053 | USER Device function not implemented               |
| DRV_E_USR_FILE_OPEN_FAILED           | 0x8004C064 | USER File could not be opened                      |
| DRV_E_USR_FILE_SIZE_ZERO             | 0x8004C065 | USER File size zero                                |
| DRV_E_USR_FILE_NO_MEMORY             | 0x8004C066 | USER Not enough memory to load file                |
| DRV_E_USR_FILE_READ_FAILED           | 0x8004C067 | USER File read failed                              |
| DRV_E_USR_INVALID_FILETYPE           | 0x8004C068 | USER File type invalid                             |
| DRV_E_USR_FILENAME_INVALID           | 0x8004C069 | USER Invalid filename                              |
| DRV_E_FW_FILE_OPEN_FAILED            | 0x8004C06E | USER Firmware file could not be opened             |
| DRV_E_FW_FILE_SIZE_ZERO              | 0x8004C06F | USER Not enough memory to load firmware file       |
| DRV_E_FW_FILE_NO_MEMORY              | 0x8004C070 | USER Not enough memory to load firmware file       |
| DRV_E_FW_FILE_READ_FAILED            | 0x8004C071 | USER Firmware file read failed                     |
| DRV_E_FW_INVALID_FILETYPE            | 0x8004C072 | USER Firmware file type invalid                    |
| DRV_E_FW_FILENAME_INVALID            | 0x8004C073 | USER Firmware file name not valid                  |
| DRV_E_FW_DOWNLOAD_ERROR              | 0x8004C074 | USER Firmware file download error                  |
| DRV_E_FW_FILENAME_NOT_FOUND          | 0x8004C075 | USER Firmware file not found in the internal table |
| DRV_E_FW_BOOTLOADER_ACTIVE           | 0x8004C076 | USER Firmware file BOOTLOADER active               |

| cifX Driver Specific ODM Error Codes |            |                                                   |
|--------------------------------------|------------|---------------------------------------------------|
| Error Code (Definition)              | Value      | Description                                       |
| DRV_E_FW_NO_FILE_PATH                | 0x8004C077 | USER Firmware file no file path                   |
| DRV_E_CF_FILE_OPEN_FAILED            | 0x8004C078 | USER Configuration file could not be opened       |
| DRV_E_CF_FILE_SIZE_ZERO              | 0x8004C079 | USER Configuration file size zero                 |
| DRV_E_CF_FILE_NO_MEMORY              | 0x8004C07A | USER Not enough memory to load configuration file |
| DRV_E_CF_FILE_READ_FAILED            | 0x8004C07B | USER Configuration file read failed               |
| DRV_E_CF_INVALID_FILETYPE            | 0x8004C07C | USER Configuration file type invalid              |
| DRV_E_CF_FILENAME_INVALID            | 0x8004C07D | USER Configuration file name not valid            |
| DRV_E_CF_DOWNLOAD_ERROR              | 0x8004C07E | USER Configuration file download error            |
| DRV_E_CF_FILE_NO_SEGMENT             | 0x8004C07F | USER No flash segment in the configuration file   |
| DRV_E_CF_DIFFERS_FROM_DBM            | 0x8004C080 | USER Configuration file differs from database     |
| DRV_E_DBM_SIZE_ZERO                  | 0x8004C083 | USER Database size zero                           |
| DRV_E_DBM_NO_MEMORY                  | 0x8004C084 | USER Not enough memory to upload database         |
| DRV_E_DBM_READ_FAILED                | 0x8004C085 | USER Database read failed                         |
| DRV_E_DBM_NO_FLASH_SEGMENT           | 0x8004C086 | USER Database segment unknown                     |
| DEV_E_CF_INVALID_DESCRIPTOR_VERSION  | 0x8004C096 | CONFIG Version of the descriptor table invalid    |
| DEV_E_CF_INVALID_INPUT_OFFSET        | 0x8004C097 | CONFIG Input offset is invalid                    |
| DEV_E_CF_NO_INPUT_SIZE               | 0x8004C098 | CONFIG Input size is 0                            |
| DEV_E_CF_MISMATCH_INPUT_SIZE         | 0x8004C099 | CONFIG Input size does not match configuration    |
| DEV_E_CF_INVALID_OUTPUT_OFFSET       | 0x8004C09A | CONFIG Invalid output offset                      |
| DEV_E_CF_NO_OUTPUT_SIZE              | 0x8004C09B | CONFIG Output size is 0                           |
| DEV_E_CF_MISMATCH_OUTPUT_SIZE        | 0x8004C09C | CONFIG Output size does not match configuration   |
| DEV_E_CF_STN_NOT_CONFIGURED          | 0x8004C09D | CONFIG Station not configured                     |
| DEV_E_CF_CANNOT_GET_STN_CONFIG       | 0x8004C09E | CONFIG Cannot get the Station configuration       |
| DEV_E_CF_MODULE_DEF_MISSING          | 0x8004C09F | CONFIG Module definition is missing               |
| DEV_E_CF_MISMATCH_EMPTY_SLOT         | 0x8004C0A0 | CONFIG Empty slot mismatch                        |
| DEV_E_CF_MISMATCH_INPUT_OFFSET       | 0x8004C0A1 | CONFIG Input offset mismatch                      |
| DEV_E_CF_MISMATCH_OUTPUT_OFFSET      | 0x8004C0A2 | CONFIG Output offset mismatch                     |
| DEV_E_CF_MISMATCH_DATA_TYPE          | 0x8004C0A3 | CONFIG Data type mismatch                         |
| DEV_E_CF_MODULE_DEF_MISSING_NO_SI    | 0x8004C0A4 | CONFIG Module definition is missing,(no Slot/Idx) |

Table 40: cifX Driver Specific ODM Error Codes

## 8.5 Error Codes cifX Device Driver and netX Driver

### 8.5.1 Generic Error Codes

| Error Code (Definition)           | Value       | Description                                 |
|-----------------------------------|-------------|---------------------------------------------|
| CIFX_INVALID_POINTER              | 0x800A0001L | Invalid pointer (NULL) passed to driver     |
| CIFX_INVALID_BOARD                | 0x800A0002L | No board with the given nameindex available |
| CIFX_INVALID_CHANNEL              | 0x800A0003L | No channel with the given index available   |
| CIFX_INVALID_HANDLE               | 0x800A0004L | Invalid handle passed to driver             |
| CIFX_INVALID_PARAMETER            | 0x800A0005L | Invalid parameter                           |
| CIFX_INVALID_COMMAND              | 0x800A0006L | Invalid command                             |
| CIFX_INVALID_BUFFERSIZE           | 0x800A0007L | Invalid buffer size                         |
| CIFX_INVALID_ACCESS_SIZE          | 0x800A0008L | Invalid access size                         |
| CIFX_FUNCTION_FAILED              | 0x800A0009L | Function failed                             |
| CIFX_FILE_OPEN_FAILED             | 0x800A000AL | File could not be opened                    |
| CIFX_FILE_SIZE_ZERO               | 0x800A000BL | File size is zero                           |
| CIFX_FILE_LOAD_INSUFF_MEM         | 0x800A000CL | Insufficient memory to load file            |
| CIFX_FILE_CHECKSUM_ERROR          | 0x800A000DL | File checksum compare failed                |
| CIFX_FILE_READ_ERROR              | 0x800A000EL | Error reading from file                     |
| CIFX_FILE_TYPE_INVALID            | 0x800A000FL | Invalid file type                           |
| CIFX_FILE_NAME_INVALID            | 0x800A0010L | Invalid file name                           |
| CIFX_FUNCTION_NOT_AVAILABLE       | 0x800A0011L | Driver function not available               |
| CIFX_BUFFER_TOO_SHORT             | 0x800A0012L | Given buffer is too short                   |
| CIFX_MEMORY_MAPPING_FAILED        | 0x800A0013L | Failed to map the memory                    |
| CIFX_NO_MORE_ENTRIES              | 0x800A0014L | No more entries available                   |
| CIFX_CALLBACK_MODE_UNKNOWN        | 0x800A0015L | Unkown callback handling mode               |
| CIFX_CALLBACK_CREATE_EVENT_FAILED | 0x800A0016L | Failed to create callback events            |
| CIFX_CALLBACK_CREATE_RECV_BUFFER  | 0x800A0017L | Failed to create callback receive buffer    |

Table 41: Generic Error Codes

## 8.5.2 Generic Driver Error Codes

| Error Code (Definition)                | Value       | Description                                          |
|----------------------------------------|-------------|------------------------------------------------------|
| CIFX_DRV_NOT_INITIALIZED               | 0x800B0001L | Driver not initialized                               |
| CIFX_DRV_INIT_STATE_ERROR              | 0x800B0002L | Driver init state error                              |
| CIFX_DRV_READ_STATE_ERROR              | 0x800B0003L | Driver read state error                              |
| CIFX_DRV_CMD_ACTIVE                    | 0x800B0004L | Command is active on device                          |
| CIFX_DRV_DOWNLOAD_FAILED               | 0x800B0005L | General error during download                        |
| CIFX_DRV_WRONG_DRIVER_VERSION          | 0x800B0006L | Wrong driver version                                 |
| CIFX_DRV_DRIVER_NOT_LOADED             | 0x800B0030L | CIFx driver is not running                           |
| CIFX_DRV_INIT_ERROR                    | 0x800B0031L | Failed to initialize the device                      |
| CIFX_DRV_CHANNEL_NOT_INITIALIZED       | 0x800B0032L | Channel not initialized (xOpenChannel not called)    |
| CIFX_DRV_IO_CONTROL_FAILED             | 0x800B0033L | IOControl call failed                                |
| CIFX_DRV_NOT_OPENED(                   | 0x800B0034L | Driver was not opened                                |
| CIFX_DRV_DOWNLOAD_STORAGE_UNKN<br>OWN  | 0x800B0040L | Unknown download storage type (RAMFLASH based) found |
| CIFX_DRV_DOWNLOAD_FW_WRONG_CHA<br>NNEL | 0x800B0041L | Channel number for a firmware download not supported |
| CIFX_DRV_DOWNLOAD_MODULE_NO_BAS<br>EOS | 0x800B0042L | Modules are not allowed without a Base OS firmware   |

Table 42: Generic Driver Error Codes

### 8.5.3 Generic Device Error Codes

| Error Code (Definition)           | Value       | Description                                       |
|-----------------------------------|-------------|---------------------------------------------------|
| CIFX_DEV_DPM_ACCESS_ERROR         | 0x800C0010L | Dual port memory not accessible (board not found) |
| CIFX_DEV_NOT_READY                | 0x800C0011L | Device not ready (ready flag failed)              |
| CIFX_DEV_NOT_RUNNING              | 0x800C0012L | Device not running (running flag failed)          |
| CIFX_DEV_WATCHDOG_FAILED          | 0x800C0013L | Watchdog test failed                              |
| CIFX_DEV_SYSERR                   | 0x800C0015L | Error in handshake flags                          |
| CIFX_DEV_MAILBOX_FULL             | 0x800C0016L | Send mailbox is full                              |
| CIFX_DEV_PUT_TIMEOUT              | 0x800C0017L | Send packet timeout                               |
| CIFX_DEV_GET_TIMEOUT              | 0x800C0018L | Receive packet timeout                            |
| CIFX_DEV_GET_NO_PACKET            | 0x800C0019L | No packet available                               |
| CIFX_DEV_MAILBOX_TOO_SHORT        | 0x800C001AL | Mailbox too short                                 |
| CIFX_DEV_RESET_TIMEOUT            | 0x800C0020L | Reset command timeout                             |
| CIFX_DEV_NO_COM_FLAG              | 0x800C0021L | COM-flag not set                                  |
| CIFX_DEV_EXCHANGE_FAILED          | 0x800C0022L | IO data exchange failed                           |
| CIFX_DEV_EXCHANGE_TIMEOUT         | 0x800C0023L | IO data exchange timeout                          |
| CIFX_DEV_COM_MODE_UNKNOWN         | 0x800C0024L | Unknown IO exchange mode                          |
| CIFX_DEV_FUNCTION_FAILED          | 0x800C0025L | Device function failed                            |
| CIFX_DEV_DPMSIZE_MISMATCH         | 0x800C0026L | DPM size differs from configuration               |
| CIFX_DEV_STATE_MODE_UNKNOWN       | 0x800C0027L | Unknown state mode                                |
| CIFX_DEV_HW_PORT_IS_USED          | 0x800C0028L | Device is still accessed                          |
| CIFX_DEV_CONFIG_LOCK_TIMEOUT      | 0x800C0029L | Configuration locking timeout                     |
| CIFX_DEV_CONFIG_UNLOCK_TIMEOUT    | 0x800C002AL | Configuration unlocking timeout                   |
| CIFX_DEV_HOST_STATE_SET_TIMEOUT   | 0x800C002BL | Set HOST state timeout                            |
| CIFX_DEV_HOST_STATE_CLEAR_TIMEOUT | 0x800C002CL | Clear HOST state timeout                          |
| CIFX_DEV_INITIALIZATION_TIMEOUT   | 0x800C002DL | Timeout during channel initialization             |
| CIFX_DEV_BUS_STATE_ON_TIMEOUT     | 0x800C002EL | Set Bus ON Timeout                                |
| CIFX_DEV_BUS_STATE_OFF_TIMEOUT    | 0x800C002FL | Set Bus OFF Timeout                               |
| CIFX_DEV_MODULE_ALREADY_RUNNING   | 0x800C0040L | Module already running                            |
| CIFX_DEV_MODULE_ALREADY_EXISTS    | 0x800C0041L | Module already exists                             |

Table 43: Generic Device Error Codes

## 8.6 Error Codes netX Driver

### 8.6.1 CIFS API Transport Error Codes

| Error Code (Definition)             | Value       | Description                                                                 |
|-------------------------------------|-------------|-----------------------------------------------------------------------------|
| CIFS_TRANSPORT_SEND_TIMEOUT         | 0x800D0001L | Time out while sending data                                                 |
| CIFS_TRANSPORT_RECV_TIMEOUT         | 0x800D0002L | Time out waiting for incoming data                                          |
| CIFS_TRANSPORT_CONNECT              | 0x800D0003L | Unable to communicate to the device no answer                               |
| CIFS_TRANSPORT_ABORTED              | 0x800D0004L | Transfer has been aborted due to keep alive timeout or interface detachment |
| CIFS_CONNECTOR_FUNCTIONS_READ_ERROR | 0x800D0010L | Error reading the connector functions from the DLL                          |
| CIFS_CONNECTOR_IDENTIFIER_TOO_LONG  | 0x800D0011L | Connector delivers an identifier longer than 6 characters                   |
| CIFS_CONNECTOR_IDENTIFIER_EMPTY     | 0x800D0012L | Connector delivers an empty identifier                                      |
| CIFS_CONNECTOR_DUPLICATE_IDENTIFIER | 0x800D0013L | Connector identifier already used                                           |

Table 44: CIFS API Transport Error Codes

### 8.6.2 CIFS API Transport Header State Error Codes

| Error Code (Definition)          | Value       | Description                                     |
|----------------------------------|-------------|-------------------------------------------------|
| CIFS_TRANSPORT_ERROR_UNKNOWN     | 0x800E0001L | Unknown error code in transport header          |
| CIFS_TRANSPORT_CHECKSUM_ERROR    | 0x800E0002L | CRC16 checksum failed                           |
| CIFS_TRANSPORT_LENGTH_INCOMPLETE | 0x800E0003L | Transaction with incomplete length detected     |
| CIFS_TRANSPORT_DATA_TYPE_UNKNOWN | 0x800E0004L | Device does not support requested data type     |
| CIFS_TRANSPORT_DEVICE_UNKNOWN    | 0x800E0005L | Device not available unknown                    |
| CIFS_TRANSPORT_CHANNEL_UNKNOWN   | 0x800E0006L | Channel not available unknown                   |
| CIFS_TRANSPORT_SEQUENCE          | 0x800E0007L | Sequence error detected                         |
| CIFS_TRANSPORT_BUFFER_OVERFLOW   | 0x800E0008L | Buffer overflow detected                        |
| CIFS_TRANSPORT_RESOURCE          | 0x800E0009L | Device signals out of resources                 |
| CIFS_TRANSPORT_KEEPA_LIVE        | 0x800E000AL | Device connection monitoring error (Keep alive) |
| CIFS_TRANSPORT_DATA_TOO_SHORT    | 0x800E000BL | Received transaction data too short             |

Table 45: CIFS API Transport Header State Error Codes

## 8.7 ODM Error Codes DBM V4

| ODM Error Codes DBM V4                       |                               |                                                                                             |
|----------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------|
| Error Code (Definition)                      | Value                         | Description                                                                                 |
| CDBM_E_MD5_INVALID                           | 0XC004C810                    | Checksum invalid                                                                            |
| CDBM_E_INTERNALERROR                         | 0XC004C811                    | Internal Error                                                                              |
| CDBM_W_WRITEREGISTRY                         | 0X8004C812                    | Error writing to the registry                                                               |
| CDBM_E_UNEXPECTED_VALUE_IN_OLD_HEADER_FORMAT | 0XC004C813                    | Error in a file containing the old DBM Header format.                                       |
| CDBM_E_CHECKSUM_INVALID                      | 0XC004C814                    | The Checksum of the old Header is invalid                                                   |
| CDBM_E_DB_ALREADY_LOADED_FORMAT              | 0XC004C815                    | A database is already loaded                                                                |
| CDBM_E_NO_VALID_TRANSACTION                  | 0XC004C816                    | No valid transaction handle given                                                           |
| CDBM_E_STD_STRUCT_ERROR                      | 0XC004C817                    | An error occurred during validation of data                                                 |
| CDBM_E_UNSUPPORTED_DATA_TYPE_FORMAT          | 0XC004C818                    | Unsupported DataType                                                                        |
| CDBM_W_CLASS_DELETED_FORMAT                  | 0X8004C819<br>(Warning)       | Using an Object which is marked as deleted                                                  |
| CDBM_W_CLIENT_DISCONNECTED                   | 0X8004C81A<br>(Warning)       | A Client has already an outstanding connection to a Table. The connection is now destroyed. |
| CDBM_E_STRUCTURE_DEFINITION_INVALID          | 0XC004C81B                    | A structure definition of an Element in a Table is invalid                                  |
| CDBM_E_NO_DATA_AVAILABLE                     | 0XC004C81C                    | No data available for this operation                                                        |
| CDBM_E_NO_VALID_STRUCTURE                    | 0XC004C81D                    | No valid structure available for this operation                                             |
| CDBM_E_NO_TOGGLE_STRING_FOUND                | 0XC004C81E                    | No Toggle string found for this number                                                      |
| CDBM_E_ELEMENT_OUT_OF_RANGE                  | 0XC004C81F                    | An element wasn't found in the Record of a Table                                            |
| CDBM_E_ELEMENT_NOT_IN_TABLE                  | 0XC004C820                    | The element is not part of the Table                                                        |
| CDBM_E_CANNOT_CONVERT_INTO_CLIENT_TYPE       | 0XC004C821                    | The data can't be converted into the Client type                                            |
| CDBM_E_TRANSACTION_ALREADY_OPEN              | 0XC004C822                    | A transaction is already open. Please close this one first before opening a new one.        |
| CDBM_I_OLD_WITHOUT_HEADER                    | 0X4004C823<br>(Informational) | Use of an old DBM file Format without Header                                                |
| CDBM_E_HR_FROM                               | 0XC004C824                    | An HRESULT was received from a Subroutine                                                   |
| CDBM_E_PARAMETER                             | 0XC004C825                    | A Parameter is invalid                                                                      |
| CDBM_E_NOTIMPL                               | 0XC004C826                    | Method is currently not implemented                                                         |
| CDBM_E_OUTOFMEMORY                           | 0XC004C827                    | Out of memory                                                                               |
| CDBM_E_NO_OPEN_TRANSACTION                   | 0XC004C828                    | No transaction open                                                                         |
| CDBM_E_NO_CONTENTS                           | 0XC004C829                    | No contents available                                                                       |
| CDBM_REC_NO_NOT_FOUND                        | 0XC004C82A                    | Record not found                                                                            |
| CDBM_STRUCTURE_ELEMENT_NOT_FOUND             | 0XC004C82B                    | Element of the Structure not found                                                          |
| CDBM_E_NO_MORE_RECORDS_IN_TABTYPE            | 0XC004C82C                    | Table type 3 can contain only one record                                                    |
| CDBM_E_WRITE                                 | 0XC004C82D                    | The data in the VARIANT must be given in a SafeArray                                        |
| CDBM_E_WRITE_NO_PARRAY                       | 0XC004C82E                    | The VARIANT contains no valid [parray] element                                              |

| ODM Error Codes DBM V4                         |                               |                                                                                                                                             |
|------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------|
| Error Code (Definition)                        | Value                         | Description                                                                                                                                 |
| CDBM_E_WRITE_CANT_ACCESS_DATA                  | 0XC004C82F                    | Unable to access SafeArray Data in the VARIANT                                                                                              |
| CDBM_E_WRITE_DATA                              | 0XC004C830                    | To write the data of this Element it must be given as a BSTR, or as an Array of VT_UI1/VT_I1                                                |
| CDBM_E_WRITE_BSTR_E1                           | 0XC004C831                    | The BSTR string must have an even length.                                                                                                   |
| CDBM_E_WRITE_BSTR_E2                           | 0XC004C832                    | The BSTR string must contain only hex digits (0..9 and a/A..f/F).                                                                           |
| CDBM_E_WRITE_CANT_INTERPRET_ARRAY              | 0XC004C833                    | Unable to interpret data in the SafeArray.                                                                                                  |
| CDBM_E_WRITE_VT_ERROR                          | 0XC004C834                    | Data type in the SafeArray is not VT_UI1 or VT_I1.                                                                                          |
| CDBM_E_WRITE_LENGTH                            | 0XC004C835                    | Data length is invalid for write operation of this type.                                                                                    |
| CDBM_WRITE_ELEMENT                             | 0XC004C836                    | Element not found in the Record of the Table                                                                                                |
| CDBM_MIN_MAX_ERROR                             | 0XC004C837                    | Can't write data because of min underflow or max overflow                                                                                   |
| CDBM_TABLE_EXIST                               | 0XC004C838                    | Table already exist in the database                                                                                                         |
| CDBM_MIN_MAX_INVALID                           | 0XC004C839                    | The Min value is greater than the Max Value                                                                                                 |
| CDBM_DEF_MIN_MAX_INVALID                       | 0XC004C83A                    | The Default Value is not in the range between the Min value and the Max Value                                                               |
| CDBM_CANT_CHANGE_STRUCTURE_WHILE_RECORDS_EXIST | 0XC004C83B                    | It's not allowed to change the structure while Records exist in the Table                                                                   |
| CDBM_NEW_STRUCT_NEEDS_TYPE                     | 0XC004C83C                    | In a newly added structure the data type must be set also                                                                                   |
| CDBM_VALUE_ERROR                               | 0XC004C83D                    | Range error while validating a value                                                                                                        |
| CDBM_DATATYPE_UNSUPPORTED_IN_RCS               | 0XC004C83E                    | The data type is unsupported in the RCS file format                                                                                         |
| CDBM_I_COUNT_OF_TABLES_EXCEEDS_RCS_RANGE       | 0X4004C83F<br>(Informational) | The count of Tables exceeds the RCS range of Tables. This can cause problems if the file is downloaded to RCS Systems                       |
| CDBM_I_COUNT_OF_TABLES_EXCEEDS_OLDDBM_RANGE    | 0X4004C840<br>(Informational) | The count of Tables exceeds the DBM32.DLL range of Tables. This can cause problems if the file is used with older Tools using the DBM32.DLL |
| CDBM_UNSUPPORTED_DATATYPE_IN_RCS_MODE          | 0XC004C841                    | The Data type is not compatible with the old database format                                                                                |
| CDBM_WRITE_UNSTRUCTURED_1                      | 0XC004C842                    | The data of an unstructured record can only be written with the 'Write' Method not with 'WriteElement'.                                     |
| CDBM_READ_UNSTRUCTURED_1                       | 0XC004C843                    | The data of an unstructured record can only be read with the 'Read' Method not with 'ReadElement'                                           |
| CDBM_WRITE_DATA_LENGTH_INVALID                 | 0XC004C844                    | The given data length doesn't correspond with the expected data length.                                                                     |
| CDBM_UNKNOWN_VIEW_MODE                         | 0XC004C845                    | The View Mode is unknown.                                                                                                                   |
| CDBM_E_DIAG_TABLE                              | 0XC004C846                    | It doesn't make much sense to add or delete records from a diagnostic table because those changes are never saved.                          |
| CDBM_E_ADR_STRING_ERROR                        | 0XC004C847                    | The given Address string doesn't fit the required format of this type where all address bytes must be in the range between 0 and FF         |

| ODM Error Codes DBM V4                             |                               |                                                                                                                                                                       |
|----------------------------------------------------|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Error Code (Definition)                            | Value                         | Description                                                                                                                                                           |
| CDBM_ERROR_FROM_VAR_CHANGE_TYPE                    | 0XC004C848                    | Function VariantChangeType return an error when trying to convert the Parameter                                                                                       |
| CDBM_E_MINERROR                                    | 0XC004C849                    | Error while comparing the Value with the lower range                                                                                                                  |
| CDBM_E_MAXERROR                                    | 0XC004C84A                    | Error while comparing the Value with the upper range                                                                                                                  |
| CDBM_E_RANGE_ERROR                                 | 0XC004C84B                    | Value out of Range                                                                                                                                                    |
| CDBM_E_TABLE_TYPE1                                 | 0XC004C84C                    | Table type 1 doesn't have a unique record length over all records                                                                                                     |
| CDBM_E_TABLE_TYPE3_ADDREC                          | 0XC004C84D                    | Table type 3 doesn't allow to insert more than one Record                                                                                                             |
| CDBM_E_TABTYPE1                                    | 0XC004C84E                    | It's not allowed to insert more Records than structure definitions in Table Type 1                                                                                    |
| CDBM_E_TOGGLE_NOT_FOUND                            | 0XC004C84F                    | Could not find the string for this value in the list of valid toggle strings                                                                                          |
| CDBM_E_TOGGLE_VALUE_IS_EMPTY_STRING                | 0XC004C850                    | The toggle string for this value is empty.                                                                                                                            |
| CDBM_VARIANT2BYTEARRAY_ERROR                       | 0XC004C851                    | Error during conversion of Variant to byte array                                                                                                                      |
| CDBM_E_SET_ELEM_PROP_DEPENDENCY                    | 0XC004C852                    | The Toggle Type needs also the additional string and the additional number entries in the Method                                                                      |
| CDBM_E_TABTYPE1_REC_DOESNT_CORRESPOND_WITH_ELEMENT | 0XC004C853                    | When reading the records of Table type 1 elementwise the record number must correspond with the element number                                                        |
| CDBM_TABTYPE1_NO_DATA_FOUND_FOR_RECORD             | 0XC004C854                    | When reading the records of Table type 1 and structure definitions are present it's assumed that for each structure element a corresponding record must exist         |
| CDBM_E_TABTYPE1_WRITE_ELEMENT_NE_RECORD            | 0XC004C855                    | When writing the records of Table type 1 elementwise and structure definitions are present it's only allowed to write the corresponding element number in each record |
| CDBM_E_TABTYPE1_WRITE_ELEMENT_NOT_FOUND            | 0XC004C856                    | When writing the records of Table type 1 with an array and structure definitions are present it's assumed that a corresponding element number of this record exist    |
| CDBM_I_TABLE_NAME_EXCEEDS_RCS_RANGE                | 0X4004C857<br>(Informational) | The Table name exceeds the maximum length of RCS compatible Table names                                                                                               |
| CDBM_W_CUT_STRING                                  | 0X8004C858<br>(Warning)       | The string exceeds the maximum length and will be limited to the maximum length                                                                                       |
| CDBM_I_STRING_TOO_SHORT                            | 0X4004C859<br>(Informational) | The string is below the minimum length. The minimum length will be reduced.                                                                                           |
| CDBM_I_STRING_TOO_LONG                             | 0X4004C85A<br>(Informational) | The string is exceeding the maximum. The maximum length will be extended.                                                                                             |
| CDBM_E_STRING_TOO_SHORT                            | 0XC004C85B<br>(Error)         | The string is below the minimum length.                                                                                                                               |
| CDBM_E_STRING_TOO_LONG                             | 0XC004C85C<br>(Error)         | The string is exceeding the maximum length                                                                                                                            |
| CDBM_E_WRONG_TYPE_FOR_WRITE                        | 0XC004C85D                    | Writing on the Element type with the given Data type is not implemented                                                                                               |
| CDBM_E_NO_APPEND_IN_STRUCTURED_RECORDS             | 0XC004C85E                    | Method IDbmRecord::AppendData is not allowed for structured records                                                                                                   |

| <b>ODM Error Codes DBM V4</b>                   |              |                                                                                                                                              |
|-------------------------------------------------|--------------|----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Error Code (Definition)</b>                  | <b>Value</b> | <b>Description</b>                                                                                                                           |
| CDBM_E_DATA_UNAVAILABLE                         | 0XC004C85F   | No data available                                                                                                                            |
| CDBM_E_CANT_CONVERT_INT                         | 0XC004C860   | Unable to convert the value into the Element type                                                                                            |
| CDBM_E_DBM_FILE_OVERFLOW                        | 0XC004C861   | You try to write a RCS like database which needs too much bytes                                                                              |
| CDBM_E_PW_ERROR                                 | 0XC004C862   | Password not correct                                                                                                                         |
| CDBM_E_FILELENGTH_CORRUPT                       | 0XC004C863   | The file length doesn't correspond to the length given in the Header.                                                                        |
| CDBM_E_STRUCT_TYPE                              | 0XC004C864   | Error in the file.                                                                                                                           |
| CDBM_E_MD5SUM_INVALID                           | 0XC004C865   | MD5 sum invalid                                                                                                                              |
| CDBM_E_STRUCT_LENGTH                            | 0XC004C866   | Error in the expected and given structure length at a specific offset in the file.                                                           |
| CDBM_E_APPEND                                   | 0XC004C867   | Append of data is only allowed if the Record contains only one data field and the field type will support this                               |
| CDBM_APPEND_NOT_SUPPORTED                       | 0XC004C868   | Append of Data not supported by this filed type                                                                                              |
| CDBM_DATA_TYPE_APPEND_ERROR                     | 0XC004C869   | Can't append Data of this type.                                                                                                              |
| CDBM_E_UNSTRUCTURED_TABLE_DOESNT_SUPPORT_LENGTH | 0XC004C86A   | A Table without structure information doesn't support a record length                                                                        |
| CDBM_E_DISABLED_WHILE_TRANSACTION_IS_OPEN       | 0XC004C86B   | The Method is disabled while a transaction is open. Please close this one first and call the Method again.                                   |
| CDBM_E_UNABLE_TO_CALL_READ_ON_LINKED_LIST       | 0XC004C86C   | The Method is disabled on a LinkedList type. Please use the IRecordCollection on this type.                                                  |
| CDBM_E_ELEMENT_HAS_NO_SUBSTRUCTURE              | 0XC004C86D   | An Element from a Table has no substructure                                                                                                  |
| CDBM_STRUCT_ERROR_FROM_VAR_CHANGE_TYPE          | 0XC004C86E   | Error from calling VariantChangeType                                                                                                         |
| CDBM_E_FOREIGNKEY_DEF                           | 0XC004C86F   | The definition of a FOREIGNKEY must contain the name of the related Table in the description and this Table must exist at this time          |
| CDBM_E_FOREIGNKEY_REF_TAB                       | 0XC004C870   | The description of a FOREIGNKEY must refer to a Table of type 'eDbmTableTypeLinkedList'                                                      |
| CDBM_E_KEY                                      | 0XC004C871   | To create a Record Collection with a KEY it's necessary to have the data type KEY at the first position in all Records of the searched Table |
| CDBM_E_KEY_TABLE_TYPE                           | 0XC004C872   | This Method needs a Table of type 'eDbmTableTypeLinkedList'                                                                                  |
| CDBM_DATATYPE_NOT_IMPLEMENTED                   | 0XC004C873   | This data type is currently not implemented                                                                                                  |
| CDBM_INSERT_POS_NOT_FOUND                       | 0XC004C874   | The position of the Record where the new one should be inserted wasn't found                                                                 |
| CDBM_E_INSERT_REC_QI                            | 0XC004C875   | Error during insertion of a Record                                                                                                           |
| CDBM_E_TAB_PROP                                 | 0XC004C876   | Invalid Property in Table                                                                                                                    |
| CDBM_E_KEY_NOT_FOUND                            | 0XC004C877   | The KEY wasn't found in the Table                                                                                                            |
| CDBM_E_KEY_INVALID                              | 0XC004C878   | The KEY is invalid for this operation                                                                                                        |

Table 46: ODM Error Codes DBM V4

## 9 Appendix

### 9.1 User Rights

User-rights are set within the FDT-container. Depending on the level the configuration is accessible by the user or read-only.

To access the **Settings**, **Configuration** and **Diagnosis** panes of the PROFIBUS MPI DTM you do not need special user rights. Also all users can select the decimal or hexadecimal Display mode or sort table entries.



**Note:** To edit, set or configure the parameters of the **Settings** and **Configuration** panes, you need user rights for *Maintenance*, for *Planning Engineer* or for *Administrator*.

The following tables give an overview of the user right groups and which user rights you need to configure the single parameters.

#### 9.1.1 Settings

|                                                        | Observer | Operator | Maintenance | Planning Engineer | Administrator |
|--------------------------------------------------------|----------|----------|-------------|-------------------|---------------|
| <i>Driver</i>                                          | D        | D        | X           | X                 | X             |
| <i>Verify or adapt Driver Settings</i>                 | -        | -        | X           | X                 | X             |
| <i>Configuring netX Driver</i>                         | -        | -        | X           | X                 | X             |
| <i>Device Assignment</i>                               | D        | D        | X           | X                 | X             |
| <i>Scanning for Devices</i>                            | -        | -        | X           | X                 | X             |
| <i>Selecting the Device (with or without firmware)</i> | -        | -        | X           | X                 | X             |
| <i>Selecting the Device once more (with Firmware)</i>  | -        | -        | X           | X                 | X             |
| <i>Firmware Download</i>                               | D        | D        | X           | X                 | X             |

Table 47: Settings (D = Displaying, X = Editing, Configuring)

#### 9.1.2 Configuration

|                             | Observer | Operator | Maintenance | Planning Engineer | Administrator |
|-----------------------------|----------|----------|-------------|-------------------|---------------|
| <i>Configuration</i>        | D        | D        | X           | X                 | X             |
| <i>Symbol Settings</i>      | D        | D        | X           | X                 | X             |
| <i>Symbol Configuration</i> | D        | D        | X           | X                 | X             |

Table 48: Configuration (D = Displaying, X = Editing, Configuring)

## 9.2 References

- [1] Device Type Manager (DTM) Style Guide, Version 1.0 ; FDT-JIG - Order No. <0001-0008-000>
- [2] IEC 61158 Third edition, 2003
- [3] „OLE for Process Control, Data Access Custom Interface Standard“, Version 2.05A, June 28 2002, OPC Specification for cyclic and acyclic OPC data communication
- [4] PROFIBUS MPI Protocol API Manual, Revision 4, Hilscher GmbH 2011

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## 9.5 Glossary

### DTM

Device Type Manager

The Device Type Manager (DTM) is a software module with graphical user interface for the configuration and/or for diagnosis of devices.

### FDT

Field Device Tool

FDT specifies an interface, in order to be able to use DTM (Device Type Manager) in different applications of different manufacturers.

### Item-Server

The Item server is part of the PROFIBUS MPI device firmware. In the Item-server data collection is outsourced as part of the OPC-server functionality.

### MPI

Multi Point Interface

The MPI is a proprietary interface of the SIMATIC® S7® series of PLCs. It is compatible to PROFIBUS and based on RS-485. It usually works with a transmission rate of 187.5 kBaud.

### ODMV3

The Online-Data-Manager Version 3 (ODMV3) is an application interface. The ODMV3 works as a server, which can be run as an out-proc server or system service. Its task is to provide different applications (e. g. SYCON.net), access to multiple devices and even share one device amongst several applications.

### OPC

OPC is the name for a technology for a manufacturer-independent software interface for accessing process data for a common data exchange between process hardware and Microsoft Windows® applications

The OPC specification defines a common and unified set of functions enabling data exchange based on symbolic addressing. The assignment of these symbols to the corresponding physical data is done by server-side configuration.

The OPC specification defines a Client/Server architecture; any clients and servers conforming to the specification (even those of various manufacturers) can be combined arbitrarily.

OPC is based on DCOM (Distributed Component Object Model = object-oriented system to "access a remote procedure") and thus uses all advantages of an object model for distributed applications: The access to the OPC server is only possible from an OPC client installed at the same PC as the OPC Server.

OPC is capable of multi-client operation: This means, multiple client applications such as visualizations, SCADA systems or similar ones may access one single server in parallel.

OPC = OLE for Process Control (OLE = Object Linking and Embedding. As the relevance of the OLE object system has decreased, now simply the name OPC is used, without referring to an abbreviation.

**OPC-Server**

OPC configuration software and application for the cyclic and acyclic OPC data handling inclusively the interfaces required. The OPC Server is based on the OPC DA 2.05a specification for cyclic and acyclic OPC data communication.

**PDI**

Process Data Interface

**PLC**

Programmable Logic Controller

A digitally programmed device for controlling a machine or facility.

**SCADA**

Supervisory Control and Data Acquisition

A concept for control and data acquisition of technical processes

**Symbolic Addressing**

Server-side assignment of symbolic names to the absolute addresses of the input signals and output signals for OPC.

**Symbol Configuration**

Server-side signal configuration for OPC, with assignment of symbolic names to the absolute addresses of the input signals and output signals.

**STEP7**

STEP<sup>®</sup>7

Programming language for the SIMATIC<sup>®</sup> S7<sup>®</sup> Series of PLCs.

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